

THIS MONTH'S COVER

Apprehending Seal Poachers

Artist: John Clymer

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In the icy reaches of the Bering Sea in 1891, Marines found themselves combatting a new form of piracy. Since the Alaskan purchase of 1867, there had been some disagreement as to whether the United States or Great Britain controlled the rich and important seal fishing industry centered on the Pribiloff Islands in the Bering Sea. Seal poachers were catching seals promiscuously on the high seas and ignoring the breeding season in a manner threatening extinction of the species.

On April 15, 1891, the United States and Britain finally agreed on a method for combatting unauthorized sealing operations. Seal killing was limited solely to that necessary for the natives' use.

The chartered steamer *Al-Ki* sailed from Mare Island, San Francisco, on June 21, 1891, with a Marine detachment of three officers and 40 enlisted men aboard. The Marines were instructed to track down violators of the agreement. Captain H. C. Cochrane and Lieutenants J. A. Turner and J. H. Pendleton were the officers commanding the *Al-Ki's* Marines. The ship reached the Bering Sea on July 2. There, the *Al-Ki* was joined by other vessels. Marine detachments aboard the *Thetis*, the *Mohican*, the *Alert*, and the *Marion* raised the combined force of United States Marines to five officers and 113 men. British vessels joined the patrol group, as did two United States revenue cutters, the *Rush* and *Corwin*.

First duties of the patrol ships consisted merely of informing all vessels found in the Bering Sea area and all residents of the islands of that area of the regulations governing traffic in seals.

The display of force afforded by the presence of the patrol vessels, plus warnings, had a salutary effect upon seal poachers. Only four seizures were necessary. Two British schooners were apprehended. On July 14, the American schooner *La Ninja* and on July 30 the American schooner *Ethel* were captured by Marines aboard the patrol ships.

The *Al-Ki* was anchored at Unalaska and acted as a prison ship for crews of the seized vessels, with the Marine detachment aboard her as guards. The British vessels were turned over to their government. In August, 1891, the *Al-Ki* with the captured crews of the American vessels aboard her under Marine guard, towed the *La Ninja* and *Ethel* 1,200 miles to Sitka, Alaska.

Returning to Unalaska, the *Al-Ki* again became a member of the patrol. No further captures were made.

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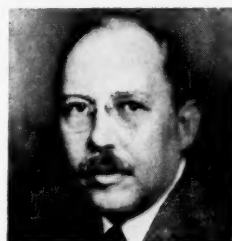


LT. COLONEL LEONARD M. MASON ("A Practical Jungle Formation") holds the Navy Cross and the Purple Heart, which he won at Cape Torokina in the Bougainville campaign. He also was commended for his work as logistics and supply officer at the Emirau landing. Upon his graduation from the University of Michigan in 1936 he entered the Marine Corps, serving aboard the USS *New York* and at the New York World's Fair. Colonel Mason is at the present time attached for duty to the Personnel Department at Headquarters Marine Corps, Washington.

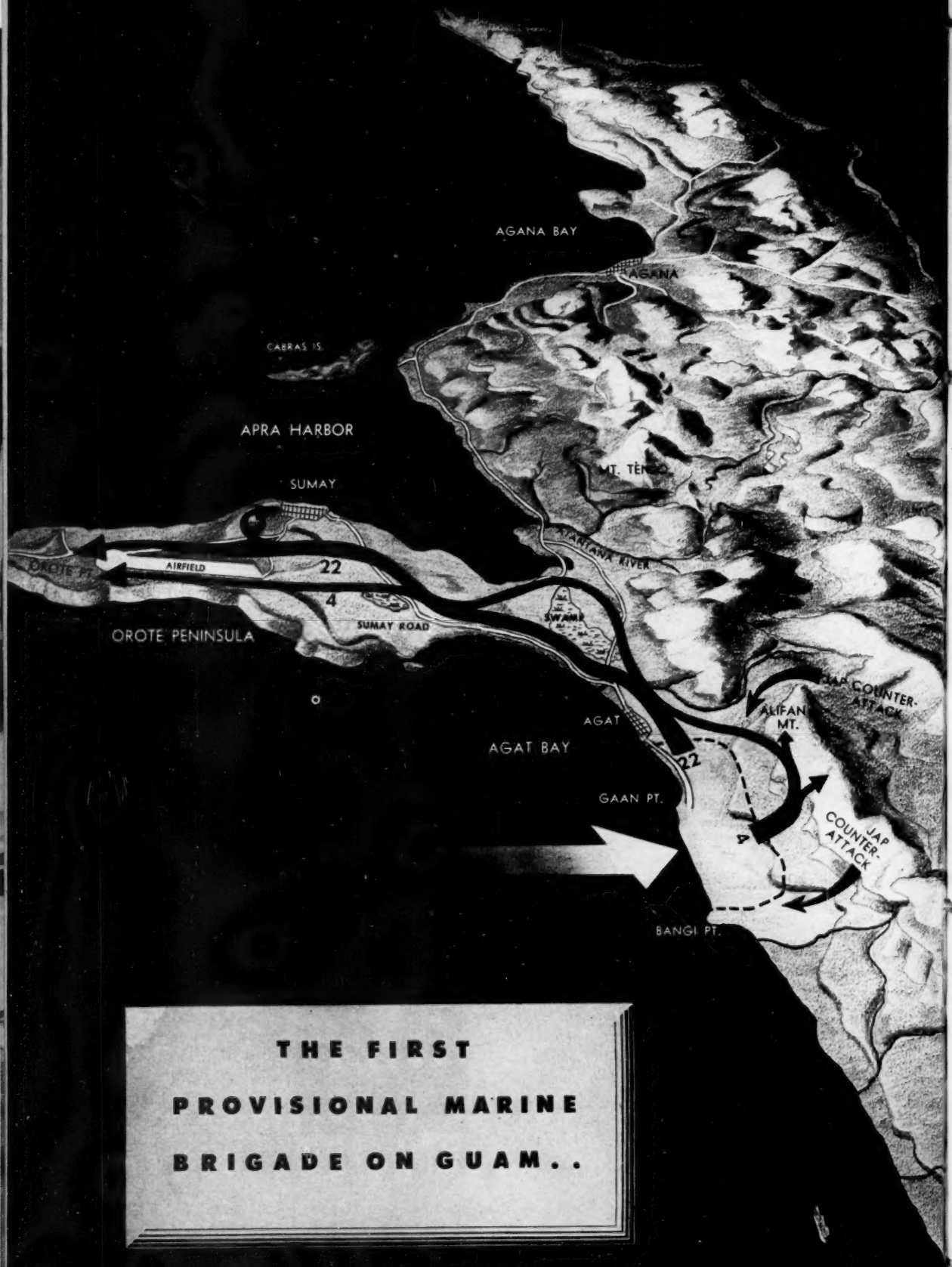
LT. COLONEL JOHN H. COFFMAN ("The Commander and His Staff") is a veteran of the Nicaraguan and Guadalcanal campaigns and now is on duty in Hawaii as legal officer for the 14th Naval District. He is a graduate of the University of Oklahoma and received his commission in the Marine Corps in 1926. His first tour of duty was

in Nicaragua, where he won a commendation for his distinguished work. He was with the Sixth Regiment and Third Marine Brigade at Tientsin, China, in 1927 and 1928 and was later assigned to the USS *Pittsburgh*. Colonel Coffman was with the Second Division at the battle for Guadalcanal, where he served as operations officer.

JAMES TRUSLOW ADAMS ("The War and After") is a distinguished American authority and writer on historical subjects. His *Founding of New England* won the Pulitzer historical prize in 1922 and his works have been widely translated and read throughout the world. Dr. Adams' most recent work, *Frontiers of American Civilization*, was published in 1944. He served in World War I as a captain on the Army's General Staff, and was subsequently detailed to special duty at the Paris Peace Conference.



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**THE FIRST
PROVISIONAL MARINE
BRIGADE ON GUAM..**

Attack on Guam

A graphic account of the First Provisional Marine Brigade's part in the conquest of Guam. In the Brigade's sphere of action, the enemy resisted with fanaticism to the death. By 1st Lieutenant Millard Kaufman *

AFTER two and a half years of war, U. S. Marines were at the threshold of Japan's inner defenses. Beyond the white water of the reef lay Guam. The beach was cratered by the Navy's interminable shelling. The sword grass burned furiously, screening the flatlands in smoke. Dive bombers ferreted out targets on the hills beyond.

Suddenly, after 17 days of pounding from the sea and from the sky, the barrage lifted. Beach-strafting planes swerved inland. Higgins boats grooved the sea in a final spurt to the reef fringe.

On the seaboard edge of the reef the men of Brigadier (now Major) General Lemuel C. Shepherd's First Provisional Marine Brigade piled into amphibious tanks and tractors. The amphibians pushed through surf covered barrier. The jagged coral nicked their treads. They rumbled into pot-holes. Jap small arms fire creased their trail. Artillery and heavy automatic weapons emplaced on Gaan and Bangi Points geysered blood, foam, and steel among them. The first waves landed. The liberation of Guam was in the hands of the infantry.

Knew They Were in for a Fight

The Brigade's sphere of action was the southern half of Guam, a fortress of mountains, jungle and brush. Its blueprint of pressure was drafted on an irregular north-south oval, broken sharply by Orote Peninsula, which points like a gnarled finger of doom toward the Orient. But, on the morning of July 21, 1944, Marines of the Brigade were not concerned with plans or prophecies. They were in a fight. They knew it.

The beach defenses of the Japs were well-organized. Concrete pillboxes built in the coral cliffs and an elaborate trench system extended from the water's edge. Machinegun emplacements and tank traps buffered the strong points. Small arms and mortar fire churned the sand of the Brigade's slim perimeter. Several 70-mm guns in concrete blockhouses enfiladed the beaches. There were mines and booby traps.

The Marines moved forward. Some of them were wounded; some were without weapons. An amphibian took three hits from an anti-boat gun. Six of its occupants were killed. The seventh was injured, but he went ahead, unarmed.

Cross fire from Gaan Point and Yona Island

raked White 2, a 300-yard strip of sand, and casualties mounted. A shell from a 75 field gun on Yona burst on the aid station party debarking at the beach. The group's only uninjured member tended the wounded for more than four hours until medical reinforcements arrived.

Assault troops of the 22nd Marines under Colonel Merlin F. Schneider moved rapidly inland. Successive waves mopped up remaining pockets of enemy resistance. Two hours after the first landing team hit the beach, the invaders (Brigade) had advanced against moderate opposition 1,000 yards inland between the southern outskirts of Agat to Bangi Point. The town of Agat was rubbed by the preinvasion bombardment. The attack swept north.

At 1500, a unit of the 22nd Marines, commanded by Captain Charles F. Widdecke, attempted to flank an insignificant mound above Agat called Bob's Hill. Withering machinegun fire from the beach fifty yards away forced a withdrawal to a series of narrow trenches near the base of the hill. Marines were pinned down for an hour while machineguns spat lead at them. Reinforcements arrived. The attack was renewed, but again the guns doled out death, and again the Marines fell back. The weapons were well concealed. They cackled incessantly from a maze of underbrush. But the Marines didn't know where the emplacements were, and many of them died trying to find out. The men wondered and waited, and dug in for the night.

Then occurred one of those inexplicable things known to every Marine who has fought Japs, and understood by none. Down a trail leading to the center of the trench marched 12 Japs. They carried the machineguns—three heavies and a light—which had held up the American advance all afternoon. The Japs were riddled by Marine bullets. "Those Nips were so heavy with slugs we couldn't lift them," said one of the men. The delay on Bob's Hill was over.

Pushing Toward Mount Alifan

To the southwest, elements of the Fourth Marines under Colonel Alan Shapley pushed toward Mount Alifan. They eliminated snipers in a grove of decapitated coconut trees. Their spearhead of tanks neutralized pillboxes, blockhouses. In a wide rice paddie, broken with tiny streams, they were hit hard by machinegun bullets and mortar

◀ Brigade's sphere of action, showing where it landed and subsequent progress.

* Marine Corps Public Relations Officer.



Along this Agat Bay beach the First Provisional Marine Brigade hit Guam on July 21, 1944. In the background Orote Peninsula's slender arm points toward the Orient.

shells. They reorganized at a power line 1,200 yards inland.

The advance continued. The saddles winding to Alifan were covered by strong points. General Sherman tanks sealed caves on the steep hillside, and the foot soldiers slugged on. Up one hill and into a valley, stumbling over the shale, clutching roots, hugging ridges, the Marines went onward, upward. Far below, the sword grass on the tablelands still burned. They reached the approaches to Alifan.

The Fourth Marines held a thin, twisted line rolling 1,600 yards from the beach to the mountain. That night the Japs counterattacked. The enemy's intermittent thrusts grew in intensity until dawn. At 2230 Jap reconnaissance parties milled about the front, cranking off a few rounds, attempting to draw fire from Marine positions on the right and in the center of the American defense. A half-hour later, a knee mortar barrage hit our seaboard flank. The Japs came over, throwing demolition charges and small land mines like hand grenades. Six Marines were bayoneted in their foxholes before the enemy was repulsed with rifle fire and grenades.

At 0100 in the morning of July 22, they smashed ahead again. Their attack centered on Hill 40, a slight rise 300 yards from the beach. A platoon of Marines defending the mound was cut down by casualties. At the base of the hill the unit reformed and forged ahead. The Japs were killed, but the Marines could not withstand a surge of enemy reinforcements. Again Hill 40 fell to the Japs.

The platoon was battered. The few remaining Marines could not retake the hill. Help came with two squads under 1st Lieutenant Marvin C. Plock, who led his men across a rice paddie

raked by enemy automatic fire in the black night. They covered the 400 yards without a casualty to join the Marines at the base of Hill 40. The Marines attacked, took their objective, counted 63 dead Japs on the heights and 350 between the beach and Hill 40.

On the right flank, Jap tanks, supported by guns mounted on trucks and followed by foot troops rolled toward Marine positions near a reservoir northwest of Alifan. The mobile attack began at 0230 with the elemental noise of motors and guns and tank treads grinding the limestone shale. Banzai screams pierced the flare-lit night. Marines fought off the charge with small arms fire. One of the men sliced the turret off the lead tank with his bazooka. Our General Shermans, from static positions along a road leading to the reservoir, knocked out the remaining enemy tanks as they approached in column. The Japanese infantry attack grew listless with the immobilization of their armored vehicles. They retired behind Alifan.

A second prong of the counterattack hit our line on the lower slopes of Alifan. The Japs utilized knee mortars and light and heavy machine-guns. They surged through a draw, throwing grenades, swinging samurai swords, shouting in their frenzy. They were led by an officer waving a battle flag on the end of a bamboo pole to which a long knife was affixed. They aimed for Marine artillery positions in the rear; they died clutching magnetic mines, makeshift explosives, picric acid blocks. A cluster of Japs was sieved by machine-gun fire as it broke from a bush forest near Alifan.

A Furious Bid for Victory

The enemy gathered its strength and prepared for its final, greatest bid to victory. The Japs



Long Toms are ranged before Mount Alifan, where the First Brigade encountered stiff Jap defenses and counterattacks and which was taken by nightfall of July 22.

were strangely silent as they formed on a hill 400 yards to the south. Marines saw the dark shadows on the skyline under the eerie light of naval flares. They checked their weapons. They lined their remaining grenades on the edge of their foxholes. They dug deep into their helmets. They watched and waited.

The Japs struck hard at 0300, hammering a wedge westward into a sector commanded by 1st Lieutenant Martin J. "Stormy" Sexton. Wave after wave pushed past the Marine periphery. The Japs carried magnetic antitank mines. They spiraled them into the defenders' foxholes like quoits. BARmen peeled off the first line of Japs; the second rushed on. Marine casualties were heavy. The wounded were bayoneted to death by the advancing horde. Ammunition ran low. Japs and Marines fought in the same foxholes, died in the same foxholes.

Remnants of the Jap's tattered first echelon infiltrated into our pack howitzer positions 400 yards from the beach. The Japs were too close for the field pieces to fire. The enemy was wiped out by small arms slugs.

On the east flank, the 22nd Marines withstood several abortive night attacks. A few Japs infiltrated along the sparsely defended front and a number of them were cut down behind our lines. A company of three officers and 66 Imperial soldiers reached the rim of the 22nd's command post, where they were surprised at dawn by sentries on the crest of a knoll 50 yards from the C.P. Regimental personnel, including office clerks and runners, tangled with the enemy.

First Lieutenant Dennis Chavez, Jr., led 25 men of a reconnaissance unit into the sharp skirmish. Their fire power totalled a few automatic weapons and two light machineguns. With his

tommygun, Chavez killed five Japs at point blank range. "One of them was a story-book Nip with buck teeth," he said. "He grinned kind of toothily just as I shot him, and I kind of hated to do it." The three officers and the 66 Imperial soldiers were annihilated. Six Marines were wounded.

The counterattack along the entire front disintegrated at 0445. Marines pushed forward with local reserves and restored their lines. More than 600 enemy dead were counted.

There was no time to rest. At 0900, Marines advanced up the heights of Alifan. The steep sides of the mountain were crowded with briary undergrowth. The pandanus trees buttressed the shale with their roots and vines entwined along the trail. Marines left their packs behind and plodded up the slope. They encountered snipers and killed them. They reduced the coconut bunkers with grenades and bullets. With white phosphorus smoke, they flushed the caves honeycombing the foothills. They advanced 1200 yards to the south, killing Jap riflemen, breaking each pocket of resistance. Elaborate caves along the ridges were sealed with demolitions. In the zone of action, 946 Japs met death. By nightfall all of Alifan was ours.

Under cover of darkness a few Japs armed with rifles and bayonets tried to infiltrate Marine lines along the top of the Alifan massif. Star shell illumination provided by destroyers made them sharp targets for mortar and artillery fire. They were repelled. Positions on the ridge were consolidated the morning of July 23.

Heavy Resistance Slows Advance

The northward advance of the 22nd Marines met heavy resistance from enemy strong points on

(Continued on page 60)

Base Defense Logistics Planning for the defense

of a captured base must begin as soon as the base is seized. The supply system must function properly or the base itself will be jeopardized. **By Lt. Colonel C. B. Rogers**

SINCE we, as Marines, are primarily interested in bases which have been recently seized, or which will be seized, from the Japanese, our actual planning for the defense of such bases begins immediately on their capture. And, at this time, the development of the base is largely a logistical task.

Prior to a consideration of the actual planning, it should be understood that supply in the defense of a base differs from the standard or normal in several ways.

First, the situation is fixed, insofar as a movement of the entire command from one locale to another is concerned. The lack of movement from one location to another eliminates the necessity for planning for supply in an unknown situation, projected into the future, and based on assumptions. In the attack, supply is initially a function of the lower echelons of command, progressing to higher echelons as the attack itself progresses. As a beachhead grows, supply functions are performed by succeeding commands as each superior headquarters takes over its duties. In the defense of a base, responsibility for supply is in the hands of the highest echelon present, and the general principle holds—that is, the impetus of supply is from the rear.

Second, supplies and equipment are imported during a period of inactivity, and levels are established, so that distribution methods approach those of normal land warfare in defense.

Fluctuations in Supply Levels

During the assault and the winning of the base, supplies are brought to the landing area in assault ships under fire. Allowances must, therefore, be made for possible losses both of ships and of cargo. On the other hand, in the defense of a base, after or even during the construction of port facilities, cargo vessels enter the harbor and unload great quantities of supplies. The absence of immediate combat allows the building of minimum levels of the various classes of supplies, and their proper storage, even including the storage of gasoline and fuel oils in large tanks.

Third, in base defense, the elements of the command, as epitomized in the task organizations, are separated, and yet they are so interwoven that it is often difficult to ascertain the parent organization of any particular subordinate. For instance, an island reserve unit, although it is a separate entity, is operating in the sector of the least one of the forward defense organiza-

tions. To illustrate further, antiaircraft units are normally grouped in a task organization separate from that of the infantry, and, at the same time, they have their battle stations within the area to be defended by the infantry. An interlocking system is thus instituted in which units on the same level of command are operating in the same area.

Let us, then, consider the logistical planning for the defense of an advanced naval base. Since the planning is completed prior to the actual defense, various stages of planning will be discussed in the order of echelons of command, rather than as they are connected with the phases of an enemy landing. It will be seen that these stages overlap somewhat, due to the basic fact in supply that troops must be fed, housed, and clothed, whether they are fighting or not.

The first stage, or period, to be considered in the supply planning for base defense begins when the assault troops have progressed sufficiently for the garrison commander to begin his work of building the base. It continues until he has developed the base and has received his normal allotments of supplies. The second period which is to be considered is the normal operation of the base, during which ships and troops perform their accustomed tasks, and the base carries on its routine functions. The third period begins when intelligence reports indicate that the enemy is preparing an attack which is capable of being directed against this particular base, and it ends when the planning for the active defense of the base is completed.

Since we are primarily interested in island bases in the Pacific, let us follow a situation which is likely to be typical. We shall carry it through the various task organizations, beginning with the area command, and illustrate what the supply officer of each echelon does to carry out his mission of supporting the tactical plans for the defense of the base.

Duties of the Garrison Commander

During the first period, the attack force has completed its mission of seizure of sufficient ground to initiate work on the base, and the garrison commander, with garrison troops, enters the scene. His is an entirely different mission. He is instructed to rehabilitate the island, repair its facilities, build in accordance with the needs of American equipment (for instance, Japanese air strips are shorter than ours), construct supply

installations and repair facilities in accordance with the purpose of the base, re-equip any assault forces which remain on the base for staging for further attack—in short, establish an advanced naval base. Not the least of all these tasks as we progress farther into Japanese territory will be to control a hostile civilian population.

An Administrative Responsibility

From this premise it can readily be seen that the initial establishment of a base is primarily a 4-section responsibility, or, to use another term, it is an administrative responsibility. Port facilities must be built, as well as roads, warehouses, fuel storage tanks, runways, and hangars, and harbor clearance must be undertaken. A water supply must be made available, of a minimum of 10 gallons a day for each man on the base, and a source of electric power must be installed. It is easy to see from this that engineers are basic tools of the supply officer, and that engineers should constitute from 12 to 15 per cent of the defense force.

It is during this period that the provisions of the orders of the Forward Area Command are put into effect. This naval command is charged with responsibility for the supply of advanced bases in the Pacific. Immediately following the assault of an island—in fact, even while the fighting is still progressing—the resupply of the landing force is merged with the establishment of minimum levels of supplies for the base still to be built. Under the orders of the Commander Forward Area, supply for all classes is automatic from D-day of an assault on a hostile island until D plus 120. Under this plan, 180 days of supplies are imported without requisition during the first 120 days, thus establishing a minimum level of 60 days. After these first four months, Class I supplies remain on an automatic basis, and the other classes are furnished on requisition.

Supply being a responsibility of command, the commanding officer of the base is thus arbitrarily responsible not only for the supplies of his own particular branch of the service, but for the supply of any branches present on the island. Parenthetically, my recommendation is that the commander of the base should be a Marine officer rather than a Naval officer. The commander of the ground forces having, in the final analysis, the responsibility for defending the base, he should also have the authority of over-all command. If, as we advocate, a Marine is appointed to the command, he may conceivably find himself handling supplies for the Army, the Navy, and the Air Forces, as well as for ground Marine organizations. This same Forward Area Command prescribes the method and source of procurement for all of these.

Now let us see how the senior supply officer present handles the receipt and distribution of such large and diverse quantities of materiel. The

method of supplying the force occupying an advanced base is the same regardless of the varying components of the command, or of the type or class of the base. At least for the present, however, we are interested in island bases, and, in particular, bases consisting of two or more islands.

The first task of the supply officer is comparable to the assigning of units to task organizations, and the writing of operations orders. He must divide the base into areas, or administrative districts, and, at the same time, designate administrative agencies which are to serve them. The purpose of such administrative districts, as well as the factors determining the location of boundaries between them, is to maintain logistical control. The boundaries between districts do not necessarily coincide with those of the sectors of the defense plan, though, if they can be made to coincide, the plans as a whole will be simplified. The manner of administrative control is in turn developed from the size of the area involved, and the number of combat and administrative troops in the area.

Figure 1 on page 8 will make this clear. We have here three theoretical islands, running east and west, and a base is to be established in the harbor on the north side of Maka Jima.

The entire base as a whole consists of two main islands, Maka Jima and Lava, in addition to the smaller island of Tuin. It is obviously necessary for the defense of the base that some forces be stationed on Lava. However, this is a separate tract of land. A water "roadway" necessarily segregates two forces much more than does an imaginary line on land. Therefore, a group separated from its parent organization by water must be assigned all the supporting units which conceivably may be required in the event the island is completely cut off from its parent. This isolation can arise from weather as well as from hostile action, a possibility which is especially to be considered in northern latitudes. In the Kuriles, for example, snows might hamper or prevent the delivery of supplies, even on a single tract of land. It might be interjected here that there are certain terrain features which might act in a manner similar to the water boundary. A high mountain range, or a large morass, for example, could well be a major difficulty in the movement of either troops or supplies.

A Water Boundary Between Bases

The Area Supply Officer, to lay the basis for his planning, decides that the water between the two main islands is an effective boundary between supply districts, and that Maka Jima and Tuin will constitute one district and Lava another. To serve these districts, he orders the Field Depot, assisted by the Supply Section of the CUB, as the Administrative Agencies for these two Administrative Districts. The headquarters of the

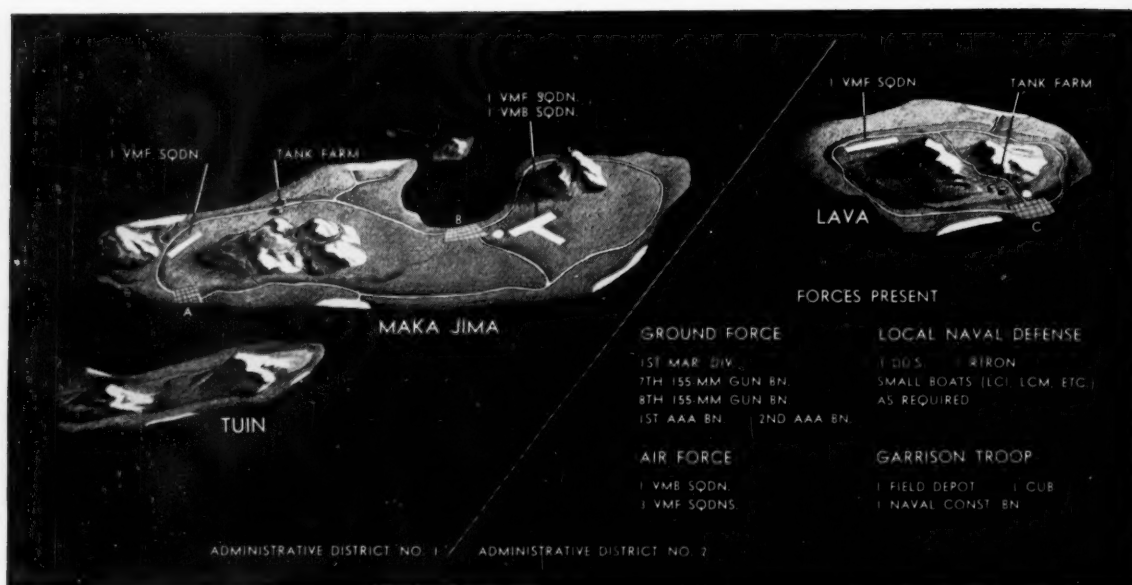


Figure 1. Water makes an effective boundary between the islands. Maka Jima and Tuin constitute one district, Lava another. Headquarters are at the town of B on Maka Jima.

two organizations will be at the town of B on Maka Jima, and will receive and store all supplies received on the base. A branch of each will establish itself on Lava at the town of C, to handle all supplies for that District.

The senior supply officer would then establish Supply Points for the operating levels of all classes of his supplies, and would notify the subordinate commands of their location, method and time of issue, and the amounts available.

In this situation, distribution of Class I supplies to all organizations will be weekly, according to a schedule to be issued by the depot. Class II and IV will be issued on requisition. Provision is made for the issue of fortification materials on the basis of engineer plans for pillboxes, road blocks, and so forth. Class III supplies are received from tankers, and are stored in tank farms, as shown on the chart. Pipelines are laid to locations where the largest quantities are to be used. Other organizations are ordered to establish their own dumps for fuels. Since ammunition is not an item used day by day, no operating level is maintained.

A further consideration involves the distribution in width and depth of all supplies, and this in turn concerns the minimum levels. The store of operating levels constitutes one echelon, so to speak, in depth. The 60 days' minimum level, which consists here of 60 days of Classes I through IV, and 15 units of fire, being the remaining supplies on the islands, must constitute the additional distribution in depth and width. To accomplish this, the supply officer divides it among a central emergency dump, reserve dumps and battle reserves. In addition, he must provide for sup-

plies which are to be placed on positions.

Let us refer again at this point to the chart. The supply officer at this time does not know what dispositions will be made by the commander of the ground forces, and, therefore, cannot place these various reserves in locations where they will be of the greatest service to the using troops. In his administrative plan, therefore, he directs the depot to establish an emergency dump within the final defensive position when this is designated by the ground force. In our problem on the chart, such an emergency dump will include 25 days of supplies, and five units of fire, thus leaving in the balance of minimum levels a total of 35 days of supply and 10 units of fire. The supply officer has thus planned the establishment of a second echelon, in depth, of his supplies.

The greater part of the islands' stock, however, is still at the depot, which is located in the town of B, near the docks and other port facilities. Furthermore, the senior supply officer, not having completed his own administrative order, obviously cannot place additional dumps any more than he could actually locate the emergency dump. Again he must place reserve dumps in defensive sectors as they are specified by the ground force commander, illustrating further the necessary close coordination required in this type of operation. He, therefore, directs that reserve dumps, containing a specified amount of supplies, be placed by the depot within the defensive sectors as they are located by the ground defense commander. In this way, he institutes a third echelon in depth. Further, since there is to be more than one sector, he simultaneously makes distribution in width.

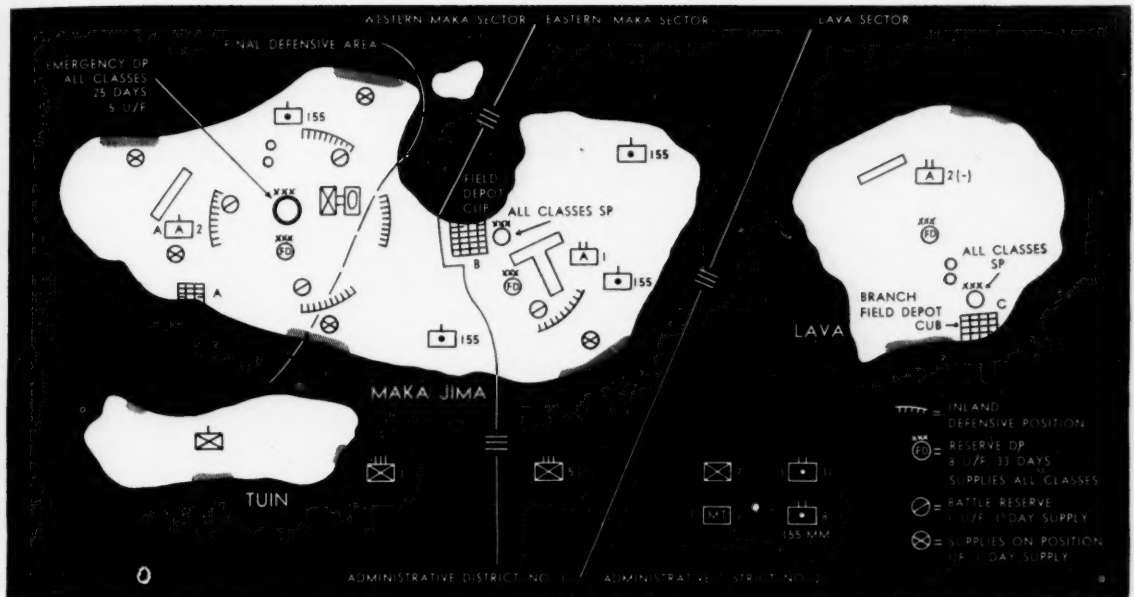


Figure 2. Showing how the islands are divided into sectors, and the manner in which the commander assigns his units to task forces in order to defend the sectors.

In the same way, he can either specify the amounts to be placed on positions, or, better, arrange for the subordinates to draw such amounts as the subordinate deems necessary.

The final division of the minimum levels is the battle reserve. This is a small amount of such classes of supplies as are required locally by battalions or separate units. Battle reserves are normally specified by regiments, battalions, or separate units themselves, and are placed in the immediate vicinity of battle positions, for use in case supply routes to the interior of the island are temporarily cut. The senior supply officer, or the ground force commander, may well state the conditions under which they may be used, though he does not necessarily state the amounts in these reserves. Thus a fourth echelon in depth, and a second in width, is achieved.

The administrative plan of the senior command then specifies the method of distribution of the various items or classes of supply contained in these minimum levels. One brief, though comparatively important, item to be covered in the plan is one which we do not care for, especially with our predilection for offense. Instructions must be given for the destruction of supply dumps in the event of withdrawal.

To cover again, generally, what has been done, the Four Section of the area, or senior, commander has designated the logistical agency which is to serve all task organizations of the command. It has given instructions to this agency, and information to the subordinates, concerning the locations, amounts, and methods of distribution, of all of the supplies on the islands. The senior Four

specifies where each of the task forces, Navy, Air, Garrison, and Ground, draws its own supplies, and who provides them.

Having thus covered the functioning of the highest command, let us move to the ground force. The supply of naval and air units is covered in their own doctrine, and is not included in this discussion. To refer again to tactics, the employment of naval and air forces in their missions of search and destruction of a hostile convoy before it reaches the base is fundamentally the same, regardless of the employment and deployment of the ground forces. Further, after the defeat of these assisting and supporting arms, the ground forces become the final factor in the defense. Therefore, it is well to consider briefly their disposition.

Figure 2, above, shows how the islands were divided into sectors. Simultaneously with this division, the commander assigns his units to task forces to defend these sectors. Normally, engineers, antiaircraft, artillery and so forth, are put into separate task groups. Let us assume that the 1st Marine Regiment is to defend the western sector of Makajima, the 5th Marines, less a battalion, defends the east sector of Makajima, and the 7th Marines defends Lavalava. The 1st Battalion, 5th, is the reserve. The seacoast artillery (155-mm gun battalions) is located by batteries so that they can cover, with fire, all of the important sea approaches to the islands. Antiaircraft battalions are placed as shown on the sketch, to protect the three airfields. Each organization assigned to the defense of a sector will normally

(Continued on page 65)

Outlook for Japan

Japan's initial successes in this war

were inevitable. She had been preparing for it for fifty years. As the war continues, however, her weaknesses become more apparent, and her defeat certain. By Murray Harris *

JAPAN has often been compared to an octopus with tentacles spread all over the southwest Pacific, but on the map she looks far more like an obscene insect sucking the life-blood from the mainland of Asia. And in her deeds she does not belie her appearance. While she can draw her sustenance from her conquests, she remains a formidable adversary, but her power dwindles as she is cut off from them one by one, and will reach the vanishing point when the last umbilical cord with the homeland is severed.

Japanese power is a hothouse growth. In the last sixty years the population of these islands has doubled, growing at the rate of a million a year and reaching the figure of 73,000,000 in 1940—about twice the population of the British Isles. At the same rate of expansion, it is estimated that she will have passed the hundred million mark by the year 1970, a fact which peace planners would do well to bear in mind. This rapid growth has been made possible only by intense industrialization, for which nearly all the raw materials are drawn from lands she has overrun.

The course that the war in the Pacific must of necessity follow is dictated by these circumstances, and is unfolding before our eyes. There can be no deviation from it. It is charted according to the mathematics of supply, which are so rigid today as to rule out miracles and even the unpredictable in war. Every mile counts, and so does every ton. Weight must win in the last analysis. That is why we are winning—because we are now delivering the goods where wanted and are stopping the enemy from getting his stuff through.

Some Elementary Logistics

To obtain a valid over-all picture, certain elementary principles of logistics must be explained. Of all the common carriers, the ship is by far the most efficient and economical. Thus, for instance, it costs about a cent a gallon to send oil by tanker from Texas around Florida to New Jersey. Freight charges by direct rail route, half the distance by sea, range from four to six cents a gallon. The advantage of ship over rail would, therefore, appear to be about ten to one in this case.

So it was found possible to land colossal amounts of materiel on the beaches of Normandy far outbalancing the maximum tonnage the Germans could haul over the battered French railways. It was only when the Allies no longer had

the sea at their backs, and had to haul everything over 400 miles of road and rail to the Vosges and the Ardennes, that the transport officer's headache started and a serious shortage developed. Tonnage on both sides evened up somewhere east of Paris. This sole fact enabled Rundstedt to stage his counteroffensive. But, if Antwerp and Dunkirk had been opened up earlier, he would never have started.

These considerations throw a very clear light on the strategical outlook in the Pacific. We must cease to regard distance as the great obstacle. There is no limit to the distance over which operations can be profitably conducted on any scale by sea, except the number of ships available. This underlines the vast advantage America, with her building capacity, has over the enemy, though he is so much nearer his own front line. More than in any other theater, the war in the Pacific is a war of attrition, and the issues will be decided on the capacity of the Japanese to replace sinkings and keep their few remaining sealines open. The outstanding deficiency of Japan's economic structure is in steel plate production, which, according to authoritative estimates, does not exceed 1,100,000 tons a year. America produces as much every month. And, in the building of ships, Japan's best year was in 1919—611,883 tons, according to Lloyds—and at that time she was not engaged in a naval program. The rate of sinkings is many times her replacement capacity.

Regarded in that light, it is seapower, with the concomitant air arm, which is beating the Japanese and will bring them to their knees. This will be hotly contested, not only by the men who have the hard task of storming the beaches, but also by the advocates of the air arm, who claim the major role for their favorite. But all these are on the spot, and enjoy an overwhelming superiority of equipment and armor, thanks only to the control of the seaways. This control will shortly be extended to cover completely the sea channels to Japan. Then we will find that the flowers of Japan's conquests, whence she draws her oil, her rubber, her bauxite, tin, copper, and quinine, as well as much of her food, will wither on the stem. It is difficult to see how she can prolong resistance once deprived of these essentials of power.

We are losing sight of the inevitability of our initial reverses, yet, at the same time, they made such a deep impression on us that we still look on the Jap as a formidable opponent who might

* Squadron Leader, RAF, retired.

at any time stage a comeback. We have already forgotten that they had been preparing this war for fifty years, and that for the first year and a half we had been improvising from scratch. It is clearly impossible to improvise a military machine, haphazardly equipped and manned by raw recruits, and expect it to be able to withstand the product of half a century of patient planning and training. But from now on, science, technical skill, and production conduct the march of events inexorably. It will be a sickening spectacle to see the Japs exterminated like vermin. They have as much chance against America and Britain combined as the bowmen of the Middle Ages when they first ran up against the arquebus. And their vaunted military qualities are as naught compared to the reasoning valor and discipline of the west.

At the moment, we have one hand tied behind our backs, and this, the hand which carries the real punch, the forces arrayed against the Siegfried Line. After the defeat of Germany, when all the dread panoply of war can be concentrated by America and Britain on the defenceless garrisons of the Japs, there will be a hideous slaughter of these second-raters who aspired to rule the world. Only the megalomania of this fundamentally frustrated race can have blinded them to the folly of engaging in mortal conflict with the two great naval and industrial powers of the world.

We Now Know Jungle Warfare

At the beginning of the Pacific war, improvisation was the order of the day, but recent events have shown that the Allies have thoroughly learned the lesson. It was really New Guinea that taught us the art of jungle fighting, and the Japs will find that they have a great deal to learn from us. It is much to be hoped that the hardened and experienced veterans of the 7th and 9th Australian divisions will take part in the coming operations. If we have heard little of them, it must be remembered that the population of Australia is slightly less than that of New York City. But, man for man, they have made their weight felt as much as any in that sector.

It was in the campaign over the Owen Stanley range that we found out that everything—clothing, equipment, arms, and rations—had to be changed. It was there that the technique of dropping frozen bread and meat from the air was developed, and paratroop artillery used. I believe the first baby 25-pounder was dropped in the Markham Valley affair. Special jungle boots, unshrinkable socks and rotproof and mosquitoproof shirts and trousers had to be supplied. By these measures, malaria was quickly controlled and the men kept in fighting trim. Not so the Japs, however, who died and are dying like flies all over the map.

Large scale land operations are to be expected

on the mainland of China, and eventually, perhaps, on the home islands of Japan, but they will be undertaken only when the enemy's arteries have been slashed. It must be extremely uncomfortable for Jap garrisons spread all over the southwest Pacific to know that they are out on a limb, the base of which is being rapidly sawn through close to the trunk. It must be equally uncomfortable for the Imperial Staff to feel that they are gradually and inexorably being recorralled in their own archipelago, where they are short of everything. Coal, iron, and oil are the trinity of indispensables in war. Of these, they have only coal in sufficient quantities in their home islands. This is a cheerless prospect, indeed, with their tradition of humorless self-immolation, which is so indicative of the inferiority of Japanese mental processes as compared to the West. Does it never occur to them that a Jap in the jungle is worth more to his emperor than a Jap with his insides blown out by a futile gesture of *hara-kiri*? Or that a Jap in a prisoner's cage can live to render further service to his country, if only from a biological point of view?

Nothing can save the isolated garrisons in their over-extended positions in the southwest Pacific from an easy and rapid extermination except withdrawal by order of the Imperial Staff. And it is perhaps too late for that. Such withdrawals are already under way in Burma, and may soon be extended to the Malay Peninsula and the East Indies. There is no possibility of supplying these garrisons. The Japs are said to be making great efforts to link up the China railways with Indo-China and Siam, and thence right through to Singapore. One can well ask what for? Are their transport experts so ignorant of the game that they think they can haul three thousand miles from Shanghai over a low capacity track a hundredth part of the materiel which will one day be pouring into that theater on American and British bottoms? In other words, they will get the bum's rush and will have as much chance as a drunk in the experienced hands of a bouncer, because they will have nothing to fight with.

The main effort is obviously being directed to the slashing of Japan's lines from her sources of supply in the Indies. With that accomplished, Indonesia may be by-passed until ripe, though the tin of Billiton, the oil of Palembang and the rubber of Malay would ease our supply problems. But, strategically speaking, the seizure of the Isthmus of Kra would cut the rail route, and, with the sea outlet to the north blocked by control of the Luzon Strait, would close the jaws of a giant pincer on the supply route and reduce to a trickle the flow of essential raw materials from the Indies to Japanese arsenals.

Deprived of nearly everything in the list of critical war materials, and of their bases in the Pacific and on the coast of China, they will cease

to be a threat to our security. When that day comes, we shall be up against a moral problem far more than a military one. Neither Americans nor Britons take kindly to mass extermination, and we may find a Japan, deprived of all the essentials for carrying on the war, determined on a national hara-kiri.

Growing Ratio of Jap Losses

It is becoming clear that they will be smoked and burnt out of their holes like rats. Every new attack in the Pacific has shown increasingly disproportionate figures for losses on either side. The Japs started by taking prisoners by the hundreds and thousands, and probably inflicted many times the casualties they suffered. But, as production got under way and American engineers perfected the lethal weapons of war, and generals learned new skills in landing operations and jungle warfare, Guadalcanal, the Coral Sea, Tarawa, Saipan, and now Leyte and Luzon are showing an ever-widening disparity in favor of our forces. First we drew level, then killed two Japs for every man lost, then three, then eight, and from now on we can confidently expect a ratio of twenty to one and more.

All these encouraging features can be traced right back to the Battle of Midway, only six months after Pearl Harbor. That battle, the most decisive engagement the Pacific has yet witnessed, laid the basis for our ocean control. Such control can be exercised today a great deal further afield than would have been thought possible only three years ago. Remarkable ingenuity has been displayed in the development of trains of supply and maintenance ships, so that now the fleet's range has been extended far beyond the pre-war figure, which was generally taken to be somewhat over 2,000 miles for sustained naval operations. The effectiveness of a naval force diminishes in direct ratio to its distance from its base of supply, so this is no small achievement. The value of the control exercised by such a fleet in action, or even passively "in being," has been underscored by a recent statement by Major General Charles P. Gross, Chief of the Army Transportation Corps, to the effect that America is now shipping to Europe every two months as much as Pershing got in the whole of the last war. *It is materiel that counts!*

Japan, on the contrary, has certainly lost more than half the tonnage with which she started the war. She has very poor replacement facilities, and her dwindling shipping is hampered in its every movement, and is shortly destined to come to a full stop. The last stage of the war will have been reached when we succeed in wresting control of the East China Sea from the enemy. The Japanese represent in their homelands a formidable power bloc. But, cut off from the outside world, they will be deprived of the materials and tools

to forge that power. They still have a powerhouse in Manchuria, and it will probably be necessary to isolate them from this secondary generating station. Landings on the China Coast, and a coast creeping job, will slash their supply lines to China and leave them only Manchuria to feed their armies in that country, for China itself has no industrial facilities for keeping a modern, mechanized army in the field. The impossible land haul a thousand miles from Manchuria over rail of very poor capacity will break the back of Japanese resistance in China, just as surely as Russian distance broke the back of the Wehrmacht at Stalingrad.

The Chinese can never hope to fight back adequately from the interior. In its best days, the Burma Road never carried more than 18,000 tons a month to Chungking; the Himalayan air route has nearly achieved that figure. But, as one division needs 10,000 tons a month to maintain it in the field, the best we can hope for at present is to equip and supply two Chinese divisions with sufficient materiel to start half a million Japs on their way home. It will be a very different matter when we can draw on their limitless reserves of manpower and equip them from the ports of the mainland. In the meantime, they are doing a magnificent job in holding some thirty divisions of Japanese bogged down in Central China, and Chiang Kai-shek deserves, and will get, all the help we can give him.

Factors for Russia's Consideration

It may be found necessary to seize control of the narrow passages between the Kurile Islands. This would assure the supply line to the maritime provinces of Eastern Siberia. Shipping from Seattle could then pour into Nicolaevsk and Sovetskaya Gavan many times the amount of materiel that could be hauled by the Russians over the Trans-Siberian, even though the track has been tripled over long distances. Such considerations will influence Russia in her coming decisions.

The Russo-Japanese honeymoon is based on a wholesome mutual respect, a sound foundation not only in domestic but also in international relations. The Japanese know they are bogged down in Central China, and that they would be engulfed if they ventured far into Siberia.

The Russians, for their part, realize that accumulated stocks, replenished from the embryonic industry of the maritime provinces, would not suffice to stop the mass of men and materiel that the Japanese could pour into Rashin and Harbin. The Soviet would depend in the last resort on the industry of the Kuzbas Basin, 3,000 miles and more to the west—an impossible rail haul for the supply of modern armies in the field. The Russians know, too, that the Japs are poised across the Manchukuo border to seize their bases at Blagoveshensk and Prograditchnaya and cut

the main Siberian line. Vladivostok itself is within a few minutes' range of Jap airfields in Korea, and is most vulnerable. The Japs' first objective would be to neutralize the air bases of the maritime Provinces, only 600 miles from the heart of industrial Japan. So the word has gone forth in the Narkomindel (Soviet Ministry of Foreign Affairs) to step lightly for the moment. But, in the meantime, many divisions of the best troops of Nippon are committed to the watch on the Amur River.

From this survey of the influence of supply on the war with Japan we obtain a clear picture of the enemy's over-extension to the four points of the compass. When the battle of Oceania has been won, we shall be astride the enemy's main supply lines. But it should not be inferred that there is any cheap and easy method of bringing Japan to

book. Every new footing will be fiercely contested, every assault will be a costly one. Our fight for Iwo Jima is proof enough of that. But the peripheral successes of the last year are obviously wearing his defences down, and we are getting into his vitals. When the team starts working on him, free of all preoccupations with the European adversary whose war potential has been computed eight times that of Japan, we should not be surprised to see him throw in the sponge.

A last point is that, cut off from the outside world, Japan would lack 75 per cent of her essential war materials. With that accomplished, it may not be found necessary to invade the enemy's homeland, and we may content ourselves with shutting them up there, as in an isolation ward, and bolting the door on them.

As the Bombardier Sees Tokyo

The heart of Tokyo, showing the moated palace of the Emperor, appears below as photographed for the first time by American planes. Just below the palace which fills the left center of the picture is a large railroad station. The Sumida River

runs across the picture past what appears to be a large stadium. In the lower right hand corner can be seen a wartime firebreak, a vacant strip cleared through congested areas. Since this picture was taken, extensive changes have been made.



Handling Enemy Civilians

In the Marianas

the feeding and sheltering of enemy civilians presented a great problem. Lessons learned there may prove helpful to us in our future actions. By Lt. Colonel Lewis N. Samuelson

IN TRYING to make plans for handling prisoners of war in the Marianas, the big question mark was the problem of enemy civilians. We had no experience on which we could rely to guide us, no information as to what the attitude of the civilians would be or how that attitude would affect our operation. However, we had certain directives, plus the Rules of Land Warfare and some imagination, and on these we based our plans.

Our instructions were that all captured persons would be treated as prisoners of war until their status as civilians or military personnel was established by Division Intelligence; that men would be separated from women, officers from non-coms and the latter from other enlisted personnel; and that a record would be kept, by name, of all prisoners, plus certain data relating to the military. After their status had been determined, civilians would be turned over to Civil Affairs, and military prisoners evacuated through Corps. The Rules of Land Warfare reminded us that we must provide food and shelter for prisoners equivalent to that received by our own troops and that we must do everything possible to protect our prisoners from injury by enemy action.

Thirty-Six Square Feet Per Prisoner

The first problem posed by the foregoing was the construction of a stockade. From our experience with a Division Brig, we estimated that for each prisoner a minimum area of thirty-six square feet must be provided, to allow room for shelter trenches and heads, and for cooking and washing facilities. A figure of 500 prisoners was arbitrarily decided on as the capacity needed, which thus required a total area of 18,000 square feet, equivalent to a rectangle of forty by fifty yards. The construction and operation of such a stockade was assigned to a detachment of an officer and twenty-five men. If available, help in the construction would be provided by the Engineers.

For the determining of the status of prisoners as military or civilian, a language officer was assigned to work at the stockade. He was charged, also, with recording names and other required data relative to all prisoners, and to serve as interpreter in giving orders and instructions. He worked with the M. P.s in planning for handling the prisoners, and was therefore familiar with our proposed procedures.

Regarding food and shelter, it was obviously impossible to take in with our assault division any special types of food or any quantity of materials

for shelter. Initially, therefore, the prisoners would have to get along on whatever "C" or "K" rations were available, and shelter would have to depend on what we could find.

With these admittedly vague plans, we landed on Saipan, and on D plus 1 proceeded to construct our stockade. The Engineers cleared the area selected and did most of the erection of the wire. The stockade enclosed a shell-battered house, together with its nearby well. By 1700, we opened for business, and in the next twenty-four hours received a total of 380 prisoners, practically all civilians.

The first thing we learned was that it is impractical to separate all the men from the women. Almost every family included four or more children, and the women alone could not care for them. Further, the women and children were thoroughly frightened, and the presence of their menfolk served to calm them to some extent, particularly under fire.

As soon as each able bodied man was brought in, we put him to work digging heads and shelter trenches. By dark on D plus 2 we had enough shelter trenches to accommodate a full 500 prisoners. As soon as we could dispense with further digging, all prisoners were given "C" rations and water, then told to get in the trenches, and warned to stay there until daylight. Our men took station in two-man foxholes around the stockade, on guard. Although the area was subjected to light shelling that evening and next morning, the prisoners gave us no trouble and received no casualties.

The blazing sun in the early morning sky convinced us that shelter was a really urgent requirement. A foraging detail was sent out and they returned with two large Japanese tarps. By rigging these and giving priority in occupying them and the house in the stockade to mothers with small children, we took care of the most essential requirements of the situation. It was noted that a twenty by thirty tarp would shelter seventy-five persons, including a normal percentage of children. In the next four days, a total of nine tarps were found and erected.

Meeting an Emergency With Few Guards

Inquiry on the morning of D plus 3 confirmed that Civil Affairs would be unable to take over the civilians for several days, inasmuch as there were but two officers and two enlisted men in the Division Civil Affairs Section, and higher head-

quarters was not yet set up to handle the situation. Consequently, we selected an area that appeared comparatively safe and constructed a stockade designed to hold 10,000 persons, with the same per capita area as our original installation. The guard on this area, which was about 240 by 300 yards, consisted of the same number of men as that on the PW stockade. While the people to be interned there were supposedly all civilians, this guard was still totally inadequate for security. However, our personnel situation would not permit the assignment of a greater number as guards. All we could do in the way of construction was to put up a barbed-wire fence, which was completed with the aid of Engineers by dark on D plus 4.

Meanwhile, the process of determining the status and recording the names of prisoners in our original stockade was undertaken. Considerable difficulty was encountered, because we had no means of keeping those prisoners who had been processed segregated from those who had not. As the number of occupants increased, this caused more and more confusion, until we decided to build an addition to the stockade, of approximately the same size as the original, as a receiving cage. This was accomplished on D plus 3, and largely solved that problem. Moreover, by dark on D plus 4, our population had grown to 996, so that the extra space was fully occupied to provide sleeping room that night.

The next morning, D plus 5, we transferred 281 civilians to the large stockade. These were all Chamorros, whom we felt would give least trouble to the limited guard. They were told to stay in a specified area at one end of the stockade, and then put to work, the men digging straddle trenches and the women cleaning up several houses

which were still standing in the area. By mid-afternoon, the population of the prisoner of war stockade again approached the 1,000 mark, so we transferred 242 more Chamorros to the civilian stockade to reduce the pressure, in anticipation of more coming in during the night. The Division Civil Affairs officers took over the administration of the civilian stockade at this time.

During D plus 6, an interior stockade was built at the opposite end of the civilian internment stockade, for occupancy by Japanese civilians. This additional fence was for the purpose of improving the standard of security, which, as mentioned above, left much to be desired. Something had to be done, however, to reduce the population of the prisoner of war stockade, and this inner enclosure was the best we could do. Accordingly, on D plus 7, we selected 340 Japanese civilians, eliminating all men of military age, and moved them to the civilian stockade. A further 172 Chamorros were also transferred there.

The next day, Island Command Civil Affairs took over the civilian stockade and reinforced the guard with seventy-five additional men. Thereafter, the processing and transfer of civilians was merely a matter of routine, insofar as we were concerned.

As related above, we had been feeding "C" rations to the prisoners. On D plus 4, however, information was received that this could not continue, as the supply of field rations was barely sufficient for our troops. Furthermore, large supplies of rice had been located in the areas occupied by our forces, and we were directed to make use of these supplies. Thus, suddenly, we found ourselves faced with a problem which we had not foreseen—rice must be cooked, and that requires utensils, and utensils to cook food for up to 1,000

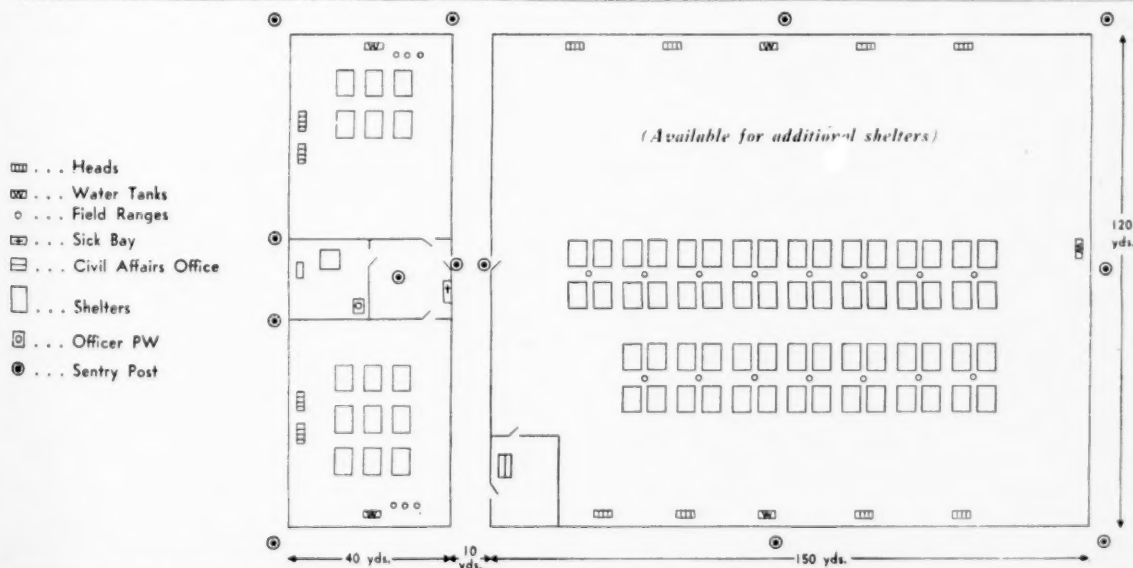


Diagram of PW stockades built on Tinian to accommodate 6,000 prisoners.

persons are not something readily manufactured in the field. Our foraging unit solved the problem again by locating several large iron pots and some Japanese field ranges. By experiment, we found that the pots were each large enough for the preparation of enough rice for 200 persons. The Jap field ranges were wood-burning, and were easily duplicated from discarded gasoline drums by knocking out both ends and cutting a door for the feeding of the fire. The cooking bowls just fitted into the end of a drum.

Solving the Water Supply Problem

Another difficulty which came up at the same time was the water supply. Our troops were rationed to about a gallon per day, and the extra drain on supplies caused by the prisoners was indeed serious. We had the water in the well belonging to the house in the stockade tested, and it was declared fit for washing and cooking purposes. Another well was dug in the receiving cage, and we were then able to limit the use of our "manufactured" water to drinking only. This helped not only the water shortage, but also the acute transportation situation.

With these two difficulties out of the way, we turned our attention to the problems involved in registering and controlling the prisoners. It had been noted that in each group of civilians that came in there was always one man who was the accepted leader. After a few days of calling for the head of each family to report the names of the members of the family, with fair success but some difficulty the plan was adopted of having the group leaders list the names and present them for registering. This speeded up the process considerably, and eliminated a lot of confusion. Further, we used the leaders to break out working parties to unload food and water, etc. The one who appeared to have most "on the ball" was made the Number One Boy in each enclosure, and instructions to the other leaders given through him.

The Island Civil Affairs personnel introduced a refinement of this system. They were putting up shelters to hold fifty persons, and, accordingly, desired the prisoners assigned to groups of that size. They called these groups "hans," and the designated leader "hancho." We adopted this practice, splitting large groups or consolidating small ones into "hans" and making the most able leader the "hancho." In registering the prisoners, getting them fed, and securing working parties, this system worked extremely well.

With these experiences to guide us, we moved over to Tinian. From the start we assumed, as a safety precaution, that it would be some time before we could transfer any civilians to Civil Affairs, and planned accordingly. We built our stockade to accommodate 6,000 persons, and proceeded to develop it along the lines of the lessons learned

on Saipan. This is shown by diagram on page 15.

All the canvas we could get our hands on we took with us from Saipan. This was a lucky move, for the weather was consistently bad and any canvas the Japs had left around was used by our troops for their own shelter. However, we could shelter only about 1,000 with our canvas, and at one time we had a population of 6,443. Some relief from this difficulty was achieved by other means, as explained below.

It was several days before we received any prisoners. In the meantime, with the help of the Engineers, we cleared two canefields and erected our enclosures—a large one 120 by 150 yards, a smaller one 120 by 140 yards, and an inner stockade inside the latter twenty yards square. We made and installed five eight-place heads in the smaller stockade, despite the fact that they had to be blasted out of solid coral. Some twenty large rice pots were rounded up, and field ranges found or made for them. Stocks of rice, seaweed, fish, and canned vegetables (Japanese) were hauled in. A lean-to was built for use as a sick bay.

Organization of Civilian Groups

Our plan was to receive all prisoners in one end of the smaller stockade, putting military personnel in the cage. As the civilians were processed, they were to be passed to the other end of the stockade, from where they would go in working parties to develop the large stockade, and then, as it became habitable, be moved over there. All the canvas was put up in the smaller stockades, and in the larger one we built huts, each capable of holding a "han" of fifty persons, from salvaged lumber and corrugated tin. These huts were put up in groups of four, with a field range and rice pot between them. Each hut had its hanchos, and each four hanchos nominated a chief, through whom orders and instructions were given and to whom rations were issued. Sixty huts were built, but then we ran out of materials.

Water was a big problem. Digging a well was out of the question, for any hole more than a foot deep had to be blasted. Initially, we hauled water in fifty-gallon drums, but, as our population grew, this became too much of a problem. The Engineers came to our aid again with five 1,000-gallon Jap tank-truck bodies. These were set up on platforms and kept filled by two other tank trucks working continuously during daylight.

With these arrangements, our plan worked very successfully up to the limit of the shelter available. Since the total shelter would accommodate some 4,000 persons, we had to keep almost 2,500 in the open weather for several days. This situation was further complicated by the fact that there were no hospital facilities available to receive civilians in large number, so that we had to keep more than 150 stretcher cases in the stock-

(Continued on page 64)

A Practical Jungle Formation In this

article the author describes a formation which was developed to cope with actual jungle conditions. Its value was later proved in combat. **By Lt. Colonel Leonard M. Mason**

This article represents a true experience. The technical organization of units is not that shown in the present Tables of Organization. The lessons learned and the ideas advanced, however, are easily adaptable to the new organization.

MOST of our fighting in the southwest Pacific is offensive in nature. We have to land on a Japanese held island and destroy the enemy. Practically all of these islands are covered with jungle. Now, what are our chances of success if we try to fight a jungle war along trails that are strange to us and fully known to our foe?

Confining our movements to the trails is playing into the Japs' hands, because they are excellent at reconnaissance patrolling and will harass and delay us constantly with ambushes. A well trained outfit will detect some of these ambushes, but not all, because the Jap is an expert at this type of warfare and the terrain is decidedly to his advantage. Assuming that we could rout the Jap in 99 per cent of these ambushes, who is really the victor? In each of these clashes our advance is halted, we are forced to deploy, thus losing time, and each clash means some loss of life and an increased burden of casualties—all without contributing to the accomplishment of the mission, destruction of the enemy force.

The obvious answer to this dilemma is "stay off the trails," but that is easier said than done. True, a reconnaissance patrol with a capable leader can take off through the thickest jungle and accomplish its mission without undue difficulty. However, when you try moving a force the size of an infantry battalion through thick jungle, avoiding all trails, you find yourself facing many difficult problems. I have faced all these problems, fortunately in a training area and over a period of many months, with the help of associate officers, have worked out a solution for nearly every problem. For those who will not have the time I had I offer my solution, hoping it will spare them making the mistakes I made at first. It is not the only solution, but it is one solution that has proved workable. The principles are clear. Details can be arranged to individual desires.

Our text book offered no suitable formation that would cope with the problems, so we made up our own formation. In doing this, it was realized that two conditions had to be satisfied. First,

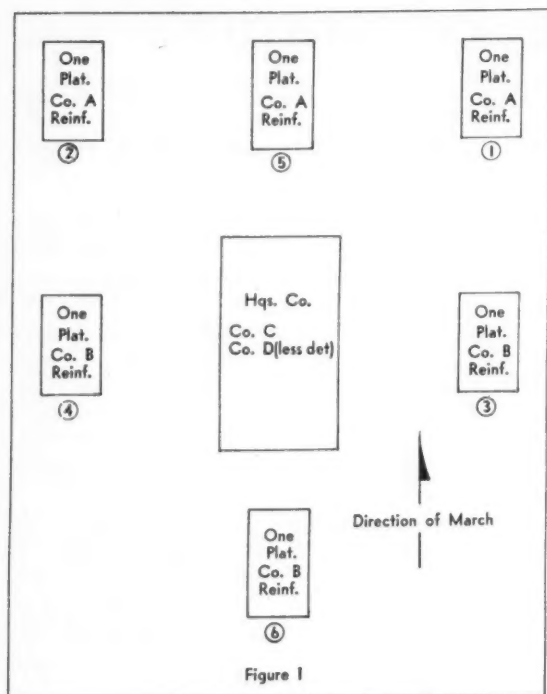
the formation must be one that will allow a large body of troops to pass through thick jungle with a minimum of noise, a minimum of fatigue, and, above all, without getting lost, i.e., without individuals getting lost or subordinate units getting separated from the parent organization. Second, the formation must be one in which we can readily defend ourselves against attack from any direction, and from which we can employ our forces in offensive action with rapidity and a minimum of confusion.

By referring to Figure I, it will be seen that one rifle company, with one machinegun platoon of the weapons company attached, is deployed across the battalion front as a covering force or advance guard. Another similarly reinforced rifle company provides security to both flanks and the rear. The remaining rifle company, weapons company less detachments, and Battalion Headquarters constitute what is generally referred to as the main body, but, in this case, is actually the Battalion reserve.

A whole company is used to the front, because in that direction contact with the enemy is anticipated. However, one cannot be assured of this, so a reinforced rifle platoon is placed on each flank and to the rear. This gives the battalion all-around security, and allows it to move independently through the jungle with safety. The formation also lends itself to regimental movements. In fact, it was used with outstanding success in several regimental jungle movement problems, the other two battalions using similar formations. Analyzing the formation more carefully, you find that the whole battalion is moving in three parallel columns. This is the secret of maintaining contact between units and not getting lost. Everyone is walking down three freshly cut jungle trails with units in column. It also reduces the noise by decreasing the number of people cutting brush, which in itself reduces fatigue.

Maintaining Direction of Columns

Now, all we have to do is make sure the three columns march in the same direction and we have control of the battalion as far as direction of march is concerned. This is acquired by having a minimum of three people reading compasses for each platoon of the covering force company, i.e., the leading unit of each column. Each of these leading platoons has its own screening force, covering force or point of one squad. (See Figure II.) The squad leader and assistant squad leader of



this force each has one compass, and the platoon leader marching at the head of his platoon has the other compass. The platoon leader is directly charged with maintaining direction for his column, and he has two NCO assistants to double check him. These NCOs have another important duty, controlling the two pair of scouts in his group. Notice I said "pair" of scouts. The NCO must see that they work as a pair, and not let the four of them form a line of skirmishers. Instead, two scouts are advancing vigorously and boldly searching out suspicious areas, their teammates covering them from the rear.

Keeping the Screening Force Abreast

Each column has two of these five-men groups working in front of it. The four teams of scouts perform the duties of platoon scouts in the approach march, but pay particular attention to lateral contact. The pairs of scouts keep each other in sight, maybe not constantly, but often enough to assure that one pair is not getting away ahead of or behind the others. In this manner, the battalion screening force is kept abreast, and the three columns prevented from echelonment. The NCOs in charge of these scouts must be on their toes at all times to keep the scouts moving in the right direction and keep them abreast. The scout should not have to bother with a compass, but should devote all time to looking and listening for the enemy and adjacent scouts.

The squad acting as advance guard for each platoon has two men left over after taking out

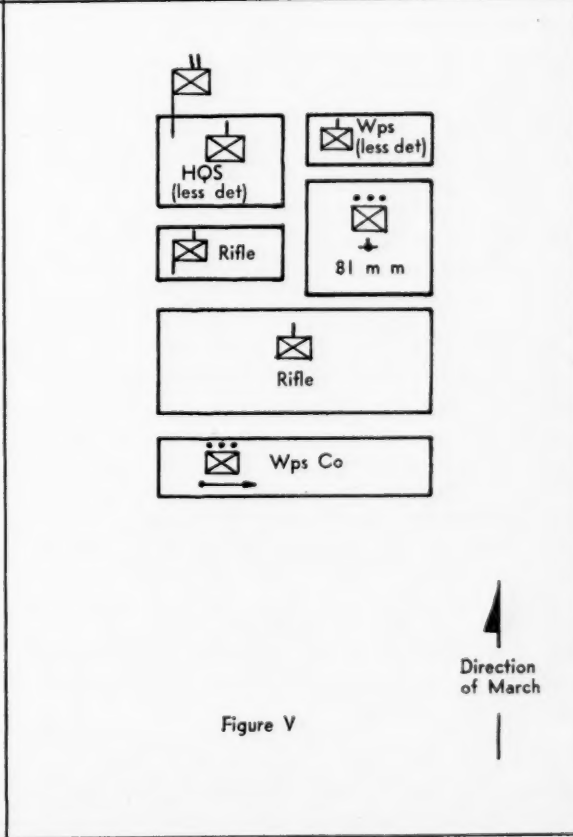
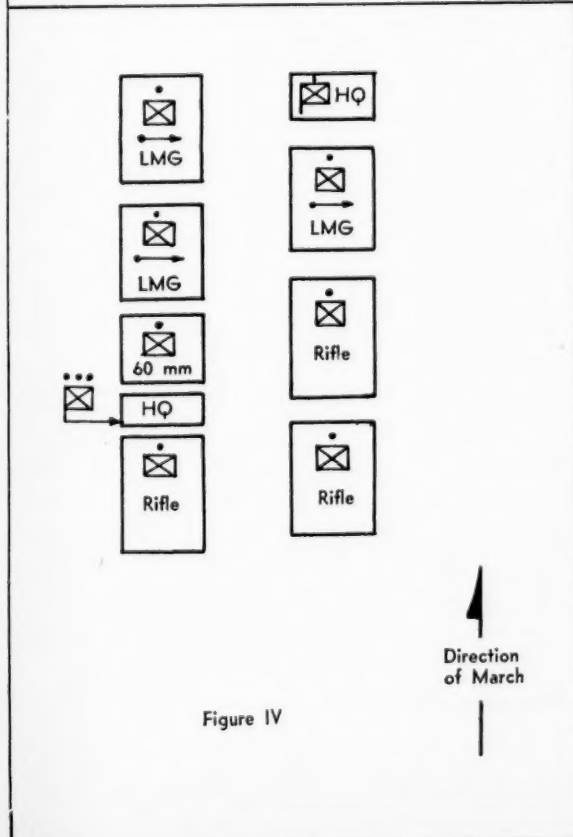
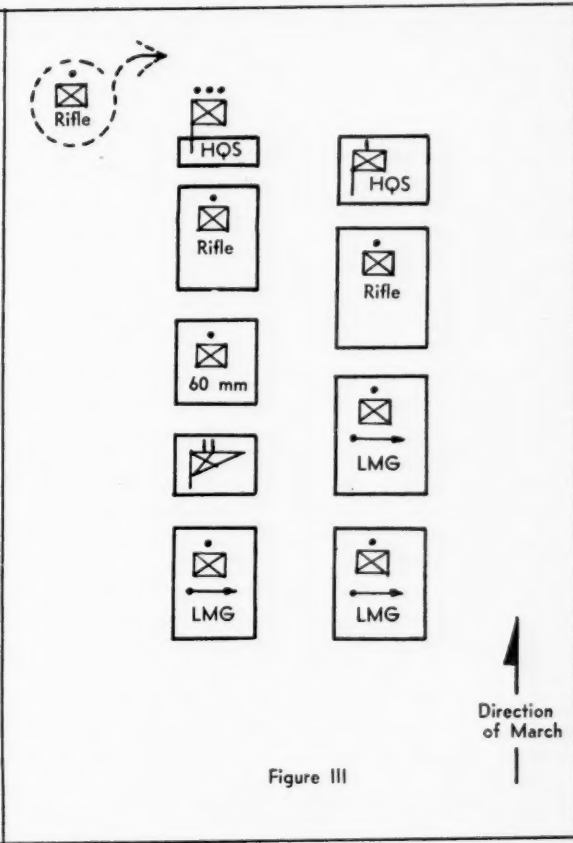
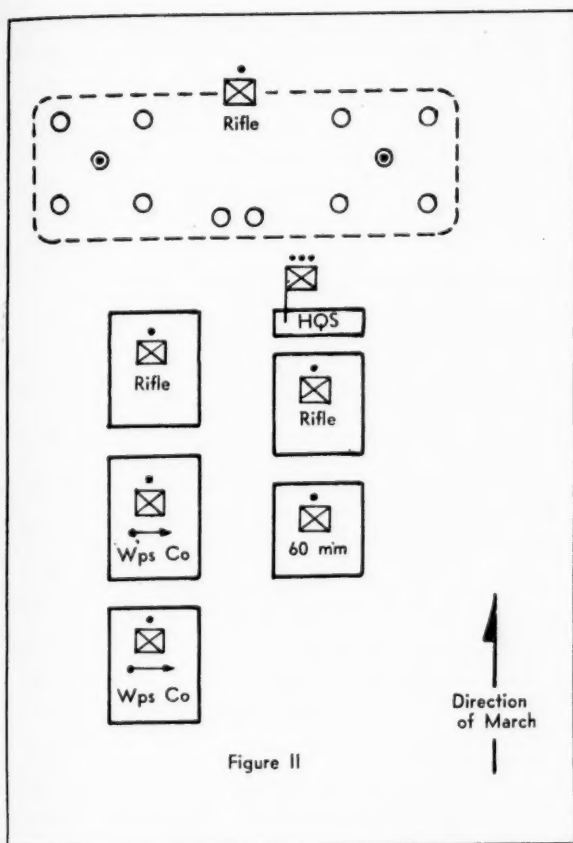
two five-men teams. These men can be used to assist in keeping contact with adjacent units, one on each side or both on one side, as the terrain and situation dictate. These individuals are shown diagrammatically in Figure II side by side at the rear center of the scouting force. They do not necessarily march there. It goes without saying that this is a very difficult and very important work, so squads should be rotated in this duty.

As for formation within the units: The screening force of the covering company has been covered. The reinforced platoons of the covering force march in a double column of files. Corresponding files of the two columns do not march abreast, but stagger themselves. The columns of files march eight to ten paces apart, provided they can keep this far apart and still see the opposite file. Otherwise, they close in to sight contact. All hands keep a minimum of five paces in distance, always in sight contact. The platoon leader marches at the head of the column. Figure II shows the distribution of units in the flank platoons of the covering force (Nos. 1 and 2, Fig. I). The left flank platoon is pictured.

The 60-mm mortar squad marches on the inboard side, with the machinegun section echeloned to the outboard rear. The reinforced flank platoons and rear guard platoon also march in a double column of files, maintaining the same distance between men. The flank security platoons (Nos. 3 and 4, Fig. I) are organized as in Figure II, except that the rifle squad shown as scouting force marches at the rear of the column, giving security to the automatic weapons. These platoon leaders march at the head of their platoons, always checking direction. This is relatively simple for good scouts, because all they have to do is follow the fresh trail cut by the preceding platoon of the covering force.

The compass should always be used as a check on direction, especially if the going is easy, and, without much cutting, the trail has grown faint. The platoon leader may use connecting files to the front to prevent his closing on the element ahead. Figure III shows the distribution of units in the center column (No. 5 to Fig. I) of the covering force, with the scouting squad represented diagrammatically. The rear guard platoon (No. 6 to Fig. I) is shown in Figure IV. The middle of the center column marches in four columns of files, with every other column abreast, i.e., the four columns staggered on each other. A three pace interval is maintained between columns, with a five pace distance between men.

At first thought on this center column, one is apt to disagree with the idea of massing troops in an approach march formation. However, do not forget that this is a formation for use only in heavy jungle. We depend on this cover for some of our protection. Artillery observers cannot



see us, and, as we are not following a trail, they cannot anticipate our location. Then, too, we have provided security against an attack in force from any direction, and the new trail we are following has been thoroughly reconnoitered by a reinforced rifle platoon. The worst we can expect is a small group that was overlooked by the covering force. This eventuality is covered by keeping all individuals five paces apart, which, with the limited observation of the jungle, does not present a very profitable target even in a column of fours. To have this force march in column of twos or threes would extend the formation to too much depth and weaken the flank protection. It would also make it difficult to quickly employ the reserve company.

The company headquarters of the covering company is at the head of the center platoon, with the company commander moving about as necessary to control his company. The company headquarters of the other security company is at the head of the rear guard. The battalion headquarters marches at the head of the main body, with the reserve and weapons company headquarters close by.

The Battalion Commander, with his Bn 2 and two scouts from the intelligence section, maintain a forward CP at the rear of the center rifle platoon of the covering company. (Figure III.) Figure V shows the distribution of units in the main body. The complete formation (except for connecting files) is shown in Figure VI, with the whole battalion represented in columns of files. The figures represent approximate distances in yards for average jungle conditions and a full strength battalion. This figure is not a scale, but the relative length of the various columns of files is truly represented.

As was pointed out earlier, the units within this formation can be shifted according to the desires of the Battalion Commander. I preferred this arrangement because I felt that each of my six security groups constituted a potent fire unit, i.e., a rifle platoon, at least two machineguns and one 60-mm mortar, fully capable of dealing independently with small enemy forces and at least delaying a concentrated attack until the deployment of the main body. In the covering company I put a section of machineguns from the weapons company on each flank. This maintained the tactical unity of the machinegun platoons and allowed me to keep the light machinegun section (three guns which would be hard to distribute equally to the flanks) together in the center of the company, where they could be employed by the weapons platoon leader wherever the company commander desired.

All weapons companies in the regiment had both light and heavy machineguns. Two battalions preferred to carry the heavy guns and one carried the light guns. My men preferred to carry

the heavy weapon, and I approved of this for training purposes. In seizing a beachhead I wanted to land carrying my heavy machineguns so they would be readily available for defense of a beachhead line. We found that the men could keep up with the heavy loads, but, if the march was to be prolonged through jungle, it was felt the flesh would prove weaker than the spirit, and the lighter loads should be favored.

Providing Immediate Mortar Fire

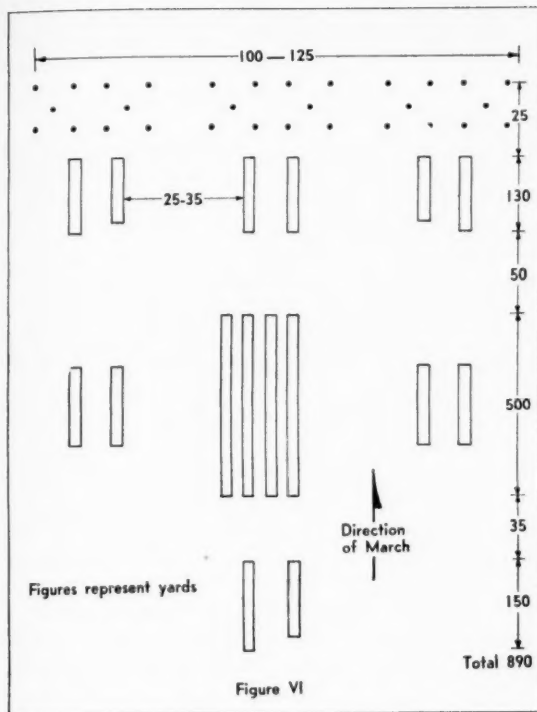
Limited observation for the 60-mm mortar section would mean that, if they were employed as a battery, only a small portion of the company would receive the benefit of mortar fire. Consequently, I attached one 60-mm mortar squad to each of the security rifle platoons to give those platoon leaders immediate mortar fire. The 81-mm mortar platoon was placed in the center of the formation for its own security, and so it would be close to Battalion Headquarters, where it could be readily used to fire in support of any section of the Battalion Sector.

What I particularly like about this formation is the location and disposition of the reserve company, with a complete machinegun platoon of the weapons company readily available for attachment if desired. It is in a compact formation allowing a rapid dissemination of orders and information to subordinate leaders, thus quickening its employment. The company is centrally located within the battalion, and can move with equal ease to any portion of the battalion zone of action. By making the flank platoons maintain their proper distance, and march opposite the center of the main body, enough room is left ahead of each flank platoon for movement of the reserve company around either flank of the covering company if necessary.

However, in this arrangement, it will take a sizeable enemy force to necessitate employing the reserve company. By looking at the diagram, you will see that, no matter in what direction contact is made, two reinforced rifle platoons are readily available if one security platoon cannot handle the situation. If the force proves too much for two reinforced platoons, a third reinforced platoon is in a good position for envelopment without disturbing the reserve company. Granted, these platoons will not necessarily all be from the same company. However, by a prearranged plan governed on location of contact, one of the two security company commanders would immediately take charge of the action. If more automatic weapons are needed, there is a complete machinegun platoon close by in the center of the formation.

Keeping Control by Wire

The Battalion Commander exercised control over the battalion in the following manner: At the head of the center column was a wire team laying down combat wire. At the rear of the head-



quarters of the rear guard was another wire team taking up this same wire. Each flank platoon leader, each rifle company commander and the Battalion Commander had a sound powered phone equipped with test clips. An EE-8-A phone, with crank removed for security against ringing, was used at battalion headquarters. Experience proved that the sound powered phone was more convenient to carry than the EE-8-A, but in wet weather it was not as dependable. Actually, our companies carried both types at their headquarters, and used the one best suited to prevailing conditions.

All watches were synchronized before movement started, and then standard operating procedure was to halt every thirty minutes. At each of these halts, each platoon leader quickly checked his formation to make certain his group was all together, in proper position, and moving in the right direction. When assured of this, the flank platoons of the covering force sent runners to the company headquarters, at the head of the wire line, and the company was reported by phone to the battalion headquarters as being in proper formation and ready to move out. If there was some delay, the fact was so reported, with an estimate of when they would be ready to move.

The rear guard was reported by phone by that company commander. The reserve company and the weapons company commander, marching along the main trunk line, similarly reported to battalion headquarters by phone. The platoon leaders of the two flank platoons reported by send-

ing their sound powered phone orderlies, with another rifleman as security, toward the center on a compass course ninety degrees off the route of march. This enabled the phone orderlies to reach the trunk line somewhere along the center column. Wherever they reached this trunk line, they snapped on the phone and reported the platoon to the battalion headquarters. Each reporting unit maintained a listening watch on the line after reporting in. When all units had reported in, the Battalion Executive officer reported to the Battalion Commander (who had his phone orderly on listening watch at the head of the wire line) that all units were in place and the battalion was ready to move out. The Battalion Commander was then able to speak at once to all of his company commanders, plus the representatives of the flank security platoons. He could give them any additional information he had obtained, announce a change in direction of march, if map reconnaissance or intelligence scout reconnaissance showed difficult terrain ahead, or simply state the time at which the battalion was to continue the march on the same azimuth.

A possible improvement to this arrangement would be to have the flank security platoon phone orderlies to leave the phone with the platoon leader, and, instead, carry a wire line to the main trunk. The distance is seldom over thirty-five yards, so time and space factors would be satisfied. The advantage of this would be in allowing the Battalion Commander to talk directly with the platoon leaders of the important flank security platoons. There are a couple of disadvantages to this that we did not solve sufficiently to allow us to adopt the practice as SOP. Battalion SOP also called for an automatic halt to check formation before crossing a stream of any size.

The wire line down the center of the column not only provided a secure and positive means of communication (since it was straddled by our own troops) but also met several other needs.

Locating yourself on the map in jungle territory is especially difficult, with the vegetation screening most of the landmarks. There is a noticeable absence of twin haystacks and lone farmhouses to allow resection or triangulation. The most accurate way to keep yourself located once you are oriented on the map is by plotting your azimuth and distance on the map. But here you run into another one of those many problems I mentioned.

Have you ever tried marching for several hours through the jungle and then estimating how far you've gone? No two people will ever agree. The rate of march varies greatly according to the density of the vegetation and topography of the terrain, and you can seldom see more than twenty yards at once. We solved this problem with our trunk line.

At each hundred yards of wire a strip of adhesive tape was wound around the wire into a bump. Adhesive was used in place of friction tape because the white was easier to spot, especially at night. The tape was formed into a bump so it could be located by sliding the hand along the wire line. To avoid confusion in case the wire had been serviced and taped several times by communications personnel, at each adhesive bump a round headed paper fastener was pushed between the wires and carefully bent so as to not break the insulation and short the line. To further assist in counting, at every fifth adhesive bump a much larger round headed fastener was used. Now, by asking the leading wire team how much wire they had put out, and allowing 30 per cent for slack wire, the Battalion Commander could get a fairly accurate measure of the distance the head of his battalion had traveled. The wire line also greatly assisted the central column in maintaining direction and keeping contact. However, all hands must be cautioned not to step on this wire, or to use it as a hand line, because the light wire can be easily shorted if abused.

Wire Line Does Double Duty

The wire line also served a fire control mission other than communication. Notice the location of the 81-mm mortar platoon in the formation. A representative of this platoon ran the wire line through his hand, counting the yards that passed through. In case contact was made with the enemy to the front, the 81-mm platoon leader snapped a phone on the line, asked the forward wire team how much wire he had let out, and then, by simple mathematics with his own wire figures, determined how far ahead of his present position our front line was. The Battalion Commander, from his forward O.P. using himself, his Bn 2 or an officer from the covering company as a forward observer and the trunk line as gun line, could register 81-mm mortar fire on the enemy in amazingly rapid time. This is an aspect that was particularly pleasing to this Battalion Commander who was anxious to put his 81-mm mortars in action rapidly, even though definite targets were not available. I figured that the morale effect and confusion caused by the bursting of the H. E. shells near the enemy position at a very early stage in the attack would disrupt any Jap plan enough to compensate for the ammunition expenditure. Of course the decision to fire was made by the Battalion Commander only and would be used only on a suitable force. But any opportunity to confuse the Jap and disrupt his prearranged plan must be grasped immediately—the results are truly compensating.

Complete Control Impossible at Night

This formation is strictly a daylight formation. A Battalion Commander cannot expect to main-

tain such complete control over a whole battalion on the march at night. Distances and intervals must be closed up at night and control should be delegated to subordinate officers during the actual movement.

There is little more to add to the explanation of this formation, except to repeat an old saying: "It's easier said than done." In other words, the formation described here has been proved workable but not without many, many hours of difficult training. However, with this article as a starter and with proper methods of instruction, a battalion should be able to master it quickly. The troops must actually move through the jungle in the formation, since it cannot be mastered in the class room. And do not be alarmed if things get fouled up the first time. It's a simple formation but it takes a good deal of coordination to make it click, and each individual in the battalion should know his part in the picture. After two or three attempts everyone seems to get the idea, leaders make the necessary minor adjustments, and you suddenly find yourself in complete control of a battalion moving on a compass course through thick jungle avoiding trails although you cannot see more than a half-dozen people. Furthermore, you can defend and/or fight in any direction with a minimum of confusion.

In closing, it may be helpful to explain the method of instruction used in presenting this to my battalion once I had decided upon a final formation. First, school was held for all officers, using a large chart of the accompanying diagrams. The Figures I through V were consolidated into one diagram, duplicated, and each individual in the battalion was given a copy. The battalion, each man with diagram in hand, was then formed in this formation in a level open field with the distances and intervals used in the jungle. The diagram was fully explained over loudspeakers.

Preliminary Preparation

The very first thing done was to caution everyone that this was strictly a daylight jungle formation and would never be used in open ground as they were now formed. The purpose of the formation was explained. It was stressed that each individual in the battalion must be acquainted with the whole formation. Then should an individual or a small group become separated in the advance knowing the location of all units in the formation would allow them to quickly orient themselves on the first troops they contacted. Each subordinate unit was taken up individually for the whole battalion. Units held their paper diagrams over their heads when mentioned so that individuals could readily orient themselves on the ground and their papers. After a period of clearing up the questions by unit commanders, the formation was dismissed. The next day we formed up in the open and moved forward into heavy jungle.

FLEET SUPPLY

Developments in the technique of fleet replenishment add new range to our Navy.

Vast quantities of supplies of all kinds are delivered to our ships on schedules that are worked out long in advance.

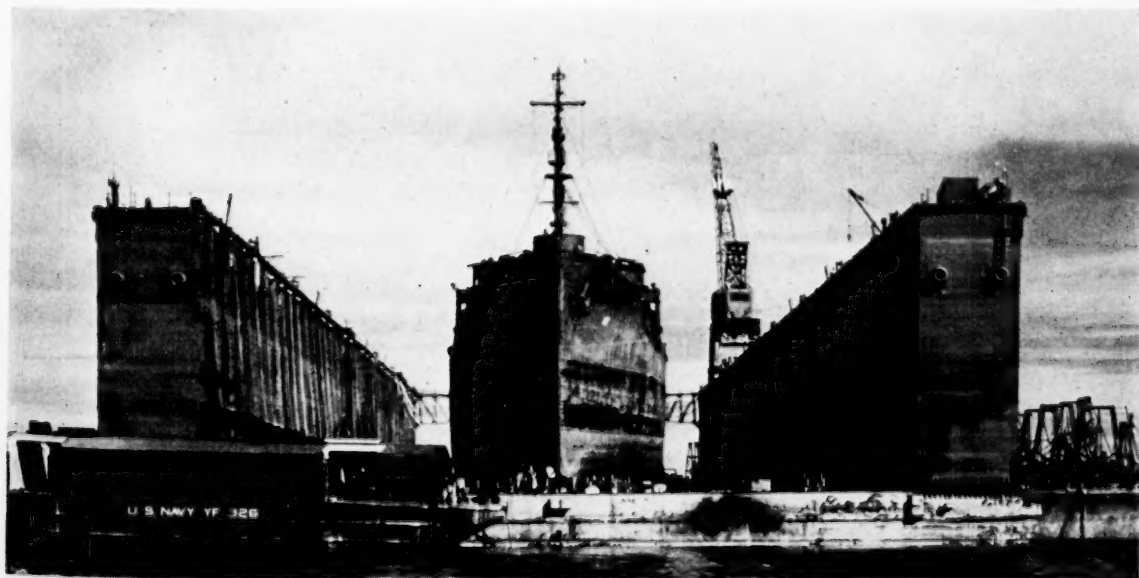
By Capt. Miles R. Browning, USN

ALL military men know that the further you get from your base the more difficult it becomes to support operations. This difficulty increases at a much higher rate than does the distance out from the base. Some authorities are of the opinion that the rate of increase is about proportional to the square of this distance; others consider that it varies about as the cube. Whichever of these estimates may be the nearer correct does not affect the truth of the maxim that extended lines of communication and supply present one of the ever-present and most devitalizing problems in mobile warfare. The majority of qualified experts consider that it is the most critical problem of all. Certainly, overextension has been the basic weakness which has brought to grief many of the great offensives of history. The Russian campaigns of Napoleon, and, later, Hitler, are classic examples of this on land; Japan's amphibious blitz of 1941-1942 occupies a similar place in the annals of sea warfare.

At first glance, it may not appear that there is any close similarity between fleet supply and maintenance on the one hand and the maintenance in

the field of land armies in a continental campaign on the other. Ships have little in common with freight trains and trucks, and the surface of the sea is totally without railroad tracks, highways, warehouses and dumps. However, by those who peer a bit more closely, this dissimilarity is quickly perceived to be largely superficial. Basically, both problems present, in identical order and importance, the same questions of: what is required?, where?, when?, and how to get it there? In both cases, the answer to the "what" is: fuel, munitions, replacement men and weapons, clothing, food, etc. These must be made available in locations which combine ready accessibility (to the fighting units) with reasonable security from enemy action; that is the "where" of the equation. As for the "when", it may be broadly stated as: in such time as to insure that there is no reduction in the potential of the fighting units due to lack of supplies. How to get these supplies and replacements to the right spots at the right times constitutes the primary mission of the service forces of either army or fleet, as the case may be.

It is thus apparent that, fundamentally, over-



A Navy floating drydock, capable of handling cruisers and destroyers, is shown at work in the Pacific. Drydocks such as this one accompanied the task force to Iwo.



Large scale operations in areas far from the states have been feasible because of such Navy supply fleet vessels as the "Burleigh", the attack transport pictured above.

seas fleet supply and continental army supply are similar problems, and that their differences are largely superficial. There are, however, two major aspects, in which the two are quite distinct. First, and most obvious, of these is the fact that, while seaborne shipping must serve as the primary carrier for overseas supply lines, in the continental theater this function must be mainly performed by the familiar agencies of land transport, i.e., trains and vehicles. The second feature of dissimilarity is by no means so readily apparent, and it is, in many ways, of far greater import in distinguishing the two. This lies in the fact that the fleet, when operating in advanced sea areas beyond its bases, possesses no terra firma on which to establish supply dumps or reserves. Hence, it follows that the combatant ships must either rendezvous with the supply vessels carrying their needs and receive them by transfer at sea or return to their rear bases to replenish.

You Can't Live Off the Sea

Another important aspect of this fundamental fact is the corollary that sea victories almost never result *directly* in the capture of enemy materiel. In continental warfare, the "scorched earth" tactic has long been a familiar and highly effective defensive measure in the face of enemy invasion. It is as old as war itself. Where it was not resorted to adequately and wholeheartedly, invading armies have always augmented their supplies and relieved their lines of communications by forage, plunder, and the utilization of captured equipment. At sea, none of these means of replenishment are practicable; the surface of the ocean is earth already scorched far more efficiently than any dynamite and fire can hope to produce. There is no "living off the land"—let alone fighting off it—in deep sea warfare. True, the German Pacific and Indian Ocean raiders in World War I maintained themselves at sea for months at a time by bunkering and plunder from their captives, but World War II has seen no noteworthy repetition of these tactics. In today's sea warfare, ships are sunk when they are brought to action, or they escape; they are not captured. So it is that

the only stock and ammunition reserves available to the man-of-war in enemy waters are those which she carries in her own compartments or those which another ship carries to her at an appointed rendezvous.

The war in the Pacific has seen the development of this technique of fleet replenishment to an amazing degree of perfection. Except for major breakdown or extensive battle damage, as a result of this sea supply, our ships have been unshackled from their bases and rendered capable of the sustained sea-keeping in action which has featured so prominently the operations in the former Japanese mandates, and, more recently, around the Philippines and Formosa. In principle, there is nothing so new in this replenishment by transfer in the open sea. Not only our own fleet, but also those of all the major naval powers, have developed its technique and exercised in its use for many years past; but the procedure was generally considered to be suitable mainly for exceptional or emergency use—in the nature of a stunt. In our naval campaign in the western Pacific, this floating supply and replacement system has been functioning on a tremendous scale; it has, in fact, become the primary method of fleet replenishment in many respects. Hundreds of thousands of tons of fuel, ammunition, planes, personnel, and miscellaneous supplies have been delivered to our ships almost as they steamed through the wreckage strewn waters of yesterday's action; delivered in precise obedience to schedules carefully preplanned weeks and months before. It is in this superb development that our fleet service forces in the Pacific have made perhaps their most momentous contribution to victory.

But the ships and forces which make up a fleet require more than just supply and replacements to keep going and fighting; they must be repaired from time to time. Battle damage, machinery breakdown, necessity for newly developed technical installations, storm, collision or grounding damage—all of these unwelcome but inevitable setbacks must be foreseen and planned for to insure continuous maintenance of our front line potential. Our surmounting of these obstacles in

the Pacific contains a saga no less remarkable and little, if any, less important than that of floating supply in our progress along the road to Tokyo.

In all the Pacific, from California to Singapore, there is only one base not in enemy hands which is capable of handling major repair to a capital ship. That base is Pearl Harbor. If one of our battleships or carriers is hit by torpedo, she must get back to Pearl Harbor to be repaired. If derangement of shafting, screws or rudder occur, due to collision, grounding, or any other cause, the same is true. Consider the import of this. The crippled ship, slowed and relatively unmaneuverable, is doubly exposed to enemy attack and to storm damage; precious days and weeks are lost to make the long passage; lost, similarly, are the services of the escort vessels which must accompany her. Consider, too, the further consequences of heavy damage of this character to a number of the big ships at the same time. Pearl can only handle so many; any more must either wait there immobilized or continue their painful and costly trek to a west coast yard. With these thoughts in mind, imagine the situation which would exist if it were necessary to return to Pearl—or farther—every ship, either large or small, needing a repair which was beyond the capacity of her own facilities to complete. The picture so conjured up is one of chaotic jamming of our major fleet bases with a welter of immobilized ships and the ensuing almost certain loss of our sea control in the Western ocean due to decimation of fleet strength.

Versatile Floating Repair Bases

Fortunately, we must confront such a spectacle only in imagination. Except for the items of major work on our largest ships, we have been able to meet the situation by the provision and extensive use of floating repair bases—just as we solved the supply problem by means of floating storehouses. These repair ships are equipped with machine shops, foundries, instrument and optical laboratories, in fact, everything that goes to make up a navy yard. Ships which can, themselves, drydock our smaller craft on self-contained marine railways, and floating drydocks which can handle our cruisers and destroyers lie at anchor in the sheltered waters of the lagoons and harbors which we have seized in our westward advance. Weight-handling gear and underwater welding and cutting equipment of almost unbelievable efficiency are included in the outfits of these mobile shipyards. To and from each one of them, as she lies at anchor, there is a constant flow of traffic; the cripples coming in for treatment and the cured and rehabilitated on their way back to the front line.

Many of these repair ships are conversions from cargo vessels—improvisations when the urgency of the need was greatest. Some of them are land-

ing ships fitted with special tools and shops and exploiting their unique ability to nose in to the beaches and establish their own pierheads. An ever increasing number of them are ships which have been built "from the ground up" for their repair function. Most of them are laid out and tooled to handle, primarily, repairs on a particular type or class of ship; but, like any good general, surgeon, they take any sick unit and go to work on it whether it is one of their specialties or not. By this is not implied that their activities are haphazard; far from it. Every repair vessel has her work assigned and coordinated down to the most minute details to effect efficient distribution of the over-all work load and to cut down by every hour possible the period of absence of the fighting ships from the front.

The handling of each item in the repair bill of a damaged vessel is given the same careful and systematic analysis and inspection which it would receive in a continental shipyard. Meticulous cost accounting is a standard feature; not only as a measure of dollar economy, but, more important, to expose lost motion and time consuming procedures for elimination. The repair department is "industrialized" in the fullest sense of the word.

Immediately upon being placed alongside of her assigned repair ship, the damaged unit is swarmed over by expert inspectors. In cases of extensive damage, staffs of these inspectors may be placed aboard the crippled ship while she is still at sea, and long before her arrival at the anchorage. These men, in company with the ship's own personnel, inspect the damage, plan the repair procedure and determine the relative priorities between the various jobs. In many cases, specifications for prefabrication of needed parts are radioed—or flown—on ahead to the repair vessel, and the wounded ship, when she arrives alongside, finds much of the spade work already done. Complete plans and blueprints of the combatant vessels of the fleet are maintained in the files of the repair departments of these ships to facilitate their work.

Although the more urgently required repairs are, of course, the primary jobs, nevertheless, every minute of the vessel's "availability" is exploited to effect work of all kinds, which, while urgently desirable, could not be accomplished while she was steaming with the fleet. Compartments and equipment which could not be opened up or worked on by the ship's company while in the combat area are gone into, overhauled, cleaned and tested, and necessary work undertaken. Machinery which could not be shut down while at sea is gone over thoroughly. Subject only to the rule that she must leave the instant her "must" repairs are completed, the golden opportunity to rehabilitate every part of a ship during her "availability" is utilized to the limit.

It may be asked why the fleet does not estab-

lish supply dumps and repair and replacement depots ashore in the islands we have taken. Certainly the "terra firma" is there, but the piers and the deep water, the handling gear and communications, the machinery and the power supply, the warehouses and the shops are not. To establish a fleet supply or repair base ashore involves the overseas shipment, disembarkation and erection of a large industrial establishment, complete, together with a prohibitive amount of waterfront improvement and construction for ship-to-shore handling and traffic. In an undeveloped—or a completely razed—location, such an undertaking would be wellnigh impossible within any reasonable period of time. Our experience in this regard with Noumea, New Caledonia, in 1942-1943, illustrates the point. Even before the United Nations moved in early in 1942, Noumea was a relatively modern city of some 11,000 people, with electric light and power, municipal water system, paved streets, telephone, telegraph and cable. The great nickel processing plant in the city was a well established major industrial installation. There were two deep water piers, although cargo-handling equipment was inadequate and flimsy. The French Colonial military and civil headquarters were located there, and were housed in permanent installations of considerable size. In mid-1942, the city became the logistic hub of the South Pacific campaign in the Solomons and the terminal port for a flood of war shipping from the West Coast of the United States and Hawaii. In spite of the excellent natural harbor and the improvements already mentioned, a major part of available United Nations' effort had to be devoted to the development of docking, handling, and storage facilities. The construction materials and the tools with which to work had to be shipped out from the mainland; so did the construction personnel. Resources of the nickel company were heavily drawn on, too, but these were scarcely more than the proverbial "drop in the bucket" in a job of such magnitude. As long as six months

after the start of these efforts, cargo vessels were still suffering delays of as much as eighty days in unloading, and both the inner and outer harbors were a heartbreaking mass of immobilized shipping.

From the start, Noumea was a more highly developed and industrialized port than any other which was to fall into our possession until we reached Luzon, in the Philippines. With the experience of Noumea in mind, it is easy to understand why fleet supply and fleet repair have not tried to set up housekeeping in the practically virgin and highly unsuitable islands along the routes to Manila. And, even were the task of constructing and equipping a fleet base of less formidable aspect, a moment's reflection on the speed with which our front lines have been pushed west and northwest will spotlight the fact that, long before it could have taken any sort of shape, it would have found itself too remote from the theater of action to fulfill its purpose.

So it is that the fleet service forces have literally taken to the sea to function in our war against Japan. Storehouses, machine shops, laboratories, depots, even drydocks and air bases, have moved aboard ship and taken up their tasks afloat. History will probably never see a more amazing reversal of Francis Bacon's old proverb of Mahomet and the mountain than this wholesale movement of the fleet's bases to the fleet. And, with this unshackling of the fighting forces from the chains that formerly bound them to rear areas, a new meaning has been given to the term "naval power" as exemplified by the fleet. It is power to strike, power to sustain itself, to repair and refit itself, even to augment itself! We are fighting the greatest naval war, and at the greatest distances from main shore bases, that the world has ever witnessed; but our lines are not over-extended, because the fleet has been made self-supporting to a degree never before known. The fleet service forces afloat have made this possible; they are bringing Japan to her knees just as much as our infantry and guns and aircraft are.



Submarine tenders such as this vessel, the "USS Proteus," make it possible for the Navy's submarine fleet to operate for long periods of time without making port.

The Commander and His Staff Some

principles governing the relations of staff officers to their commander. The staff officer is responsible to his own commander alone, in everything. By Lt. Colonel John H. Coffman

"In such cases, justice to the subordinate demands, and the necessities and efficiency of the public service require, that the order of the superior should protect the inferior; leaving the responsibility where it properly belongs—upon the officer who gave the command." McCall v. McDowell, 1 Abb. 212, 15 Fed. Cases No. 8673.

A COMMANDER is responsible for every act committed, and every act omitted, within his command. There is no escape for a commander from his responsibility so long as he retains command. A commander cannot purge himself of responsibility for the failure, at any level, of subordinate commanders by pleading that an intervening subordinate failed in his duty. He must not only control and supervise the subordinate commanders immediately below him in the chain of command, but also have a detailed knowledge of the performance of duty within his organization throughout all levels and ranks. To assist him are certain individuals who are grouped together under the name of the unit staff.

Not too long in the past, a commander could stand upon a rise of ground close to the battle field and see his troops arranged about him, as well as the larger portion of the enemy forces. Inevitably, as the time of battle approached, a number of persons usually highly connected, although scantily trained at arms, would join a commander. For many and varied reasons, it was desirable to actively employ such persons, while, at the same time, needless exposure of them to the battle danger was to be avoided. The best place to keep such individuals well in hand was under the eye of the commander, so they were attached to his headquarters.

The battle, in the development stage, required the commander to remain where he could survey the entire scene, and, at the same time, shifting fortunes demanded that orders be sent to subordinate units from time to time. The solution was a natural. Those attached to the headquarters who had not been assigned other duties were used as messengers to carry orders from the commander to the subordinate commanders.

The increase in the number of forces involved, and the expansion of the battle area, has long since removed the commander from the hilltop from

which the troops and the field could be surveyed, in its entirety without difficulty.

Channels of communication have also been developed. The transmission of information, orders, and instructions through staff officers is only one means among many available to the commander.

The successful transmission of a verbal message depends upon a vocabulary or language common to the speaker and the listener. All persons concerned with the same staff section problems should learn and apply the same meaning to words and phrases. Thus a communication transmitted from the commander through his staff officer to the corresponding staff officer of the subordinate commander, and, finally, to the subordinate commander, is made more complete, as well as more rapid, by these processes. First, the commander, because he has expressed his policies to his own staff officer many times, is able to make his order clear to that staff officer in a few words. Secondly, the staff officer, through many conversations with his corresponding staff officer at the level below him, has developed a common vocabulary and so can transmit in few words, in clear and concise language, the order. Thirdly, the staff officer receiving the order is familiar with his commander's policy, and has learned how to briefly transmit the order in terms readily understandable to his own commander.

Responsibility of the Staff Officer

The responsibility for the use of the staff officer channel of communication lies with the commander who selected the means. The staff officer has a responsibility, but it is to his own commander alone, and is strictly limited to compliance with his own commander's directive, or enunciated policies in the matter. One commander may direct that his staff officer make decisions in routine matters when a policy has been announced. Another commander may insist that the staff officer act merely as a messenger and transmit all messages to him at once, before any action is taken.

The responsibility of the staff officer to his commander alone is the greatest principle of command through staff, and the one most frequently misunderstood. Peace time produced a great fear of staffs. A headquarters was often referred to as a staff run headquarters. This is an expression of disloyalty to the commander whose headquarters are described as staff run. The idea implied is either that the commander is indifferent to, or ignorant of, the duties of his position. It is an in-

dictment of the staff, implying that the staff will keep the commander in ignorance of orders issued under his authority or the reason for orders issued. Further, there is the implication that the commander has sealed himself from the immediate personal control of the commanders of the next subordinate units.

The concept of a headquarters as staff run also presupposes that the chief of staff has the subordinate staff officers working for and responsible only to him, whereas the commander has only the chief of staff responsible directly to him.

The responsible commander and his chief of staff must be considered an entity in the discharge of the command function. Human limitations being what they are, one individual must eventually have some rest and repose. The responsible commander must necessarily be absent from his command post upon occasions. Accordingly, at the located headquarters, there must be a person who can and will make the necessary decisions and issue the necessary orders or directives. That person is the chief of staff.

Confidence Based On Friendship

He should preferably be a personal friend of the commander, because the surest basis for implicit confidence lies in personal friendship based upon mutual respect. The chief of staff, through close association, is thoroughly familiar with the policy of his commander. When the necessity arises for a decision and the responsible commander is absent, the chief of staff can unhesitatingly issue the necessary orders that will carry out the policies of the responsible commander. It follows that the responsible commander should select the person who will be his chief of staff.

The remaining members of the staff team may be any competent officers capable of handling the details which will effectuate the policies of the commander. A competent staff officer must be one who has had experience leading troops, preferably in actual combat. An officer too long away from troops forgets the price exacted from the physical condition of troops by marches, scant food, and constant alerts. He forgets that the time and space factor which controls the coordination of the various subordinate units is based upon many factors other than the distance from here to there on a map.

The duties of the various staff sections overlap to a considerable extent. Again, human limitations require that the individual relinquish the active supervision of the details of his assigned task periodically. The traditional four staff sections naturally divide into two groups. Each staff officer must familiarize himself with the detailed duties of at least one other staff member. The closest exchange of information among all the staff sections is imperative.

Close daily association should produce a mutual

confidence that will smooth the interworkings of the various staff sections. A commander will assign to one staff officer a task which normally falls within the scope of another staff member. What matter who performs a specific task so long as it is expeditiously accomplished? When mutual confidence and assistance do not exist, there arises a condition of intra-staff jealousy that will inevitably and soon tear the headquarters apart, to the ultimate damage of the troops.

The relation between the responsible commander and his next subordinate commanders is a decisive factor in the success or failure of the command as a whole. Just as the daily staff conference is so necessary to the smooth working of a staff, a conference of unit commanders at frequent intervals will assist in the proper coordination of the efforts of all the units of a command. Where possible, the unit commander's conference should be limited to the commanders alone. When subordinates of a commander are present, that commander will, from natural vanity, feel called upon to defend whatever course he has pursued or even discussed for fear that, if he does not do so, his subordinates will regard him with diminished respect.

Organizations whose size require a knowledge of a large range of details about varied arms will probably require the staff of the commander of the organization to be present at a conference of the next subordinate commanders. It might appear to some that the presence of the staff is in contravention to the policy of not having subordinates present at a commander's conference. Such is not necessarily so. The higher commander whose staff is present has planned the conference. His planning has been based upon the details furnished him by his staff. This is no council of war, the staff officer is not there to advocate a policy; he is present to furnish his commander with the details already considered, and to answer any questions posed by the commander as a result of some matter brought to his attention by a subordinate commander which had not previously been anticipated. Also, an opportunity is presented to the subordinate commanders for constructive criticism of any staff officer. The commander can then decide if the staff officer has been at fault, and, what is more important, if the staff has been complying with his commander's orders or directives.

Clarifying a Command Function

The relation of the staff officer to the commander is a phase of the command function that is not always clearly understood. A cliché often heard when staffs are mentioned is, "A staff officer commands nothing." The fact is that a staff officer may, and frequently does, issue a detail order at the direction of the commander which places in effect the policy announced by his commander. The staff officer issues the order "by the

command of" his commander. The staff officer's responsibility is to his own commander alone, and the order must comply with his commander's directive.

The relation of a staff officer to the subordinate unit commanders touches upon the prerogatives of a commander, which find their proper place within his own command and not outside of it. When a unit commander attempts to apply what he considers his prerogatives outside of his own unit, he immediately comes in conflict with the prerogatives of another equal, or superior, commander. It would be a travesty to argue that a commander of a part can limit the prerogatives of the commander of the whole.

Good Personal Relations Essential

Within the limits prescribed by the staff officer's commander, every effort should be made by the staff officer to facilitate personal, friendly relations with others. The best method for a staff officer joining a command to speedily establish good personal relations is by calling in person on each subordinate commander in the next echelon of command. After instructions have been received from the organization commander, usually through the chief of staff, the staff officer, in a personal call upon the subordinate commander, should outline his conception of how he will perform his task as far as that unit is concerned, and request advice from the unit commander for any changes that are desired. Should the unit commander object to any outlined, proposed procedure, and indicate that another method is desired which contravenes instructions previously received from the staff officer's commander, then that fact should be reported to the organization commander, or the chief of staff, for a decision as to which method is to be followed. The courteous way of announcing to the subordinate commander the decision is for the chief of staff to communicate it personally. However, should that method be not adopted, the staff officer should promptly notify the subordinate commander of the method to be followed.

The same procedure should be followed by the staff officer in establishing personal contact with the corresponding staff officers of higher, adjacent, and subordinate commands. Prompt meeting face to face with those with whom direct dealings are expected will, in the most rapid fashion, establish a common meeting ground and expedite the exchange of information and orders.

There is an important difference in the method used in calling upon higher and adjacent unit staff officers and in calling upon lower unit staff officers. Higher and adjacent staff officers should be called, where possible, by telephone previous to a visit and inquiry made whether or not the staff officer can be visited direct or should personal application be first made to his commander. Here

again the courteous method is for the staff officer visited to introduce the visiting officer to his commander. When a visit is contemplated upon the staff officer of a lower unit, the unit commander should be visited and his permission obtained before communicating with his staff officer.

Should permission be refused, that fact must be communicated to the higher commander at once. Frequently a commander will order his staff officer to telephone or go to see a subordinate staff officer in order to clarify a point, and, unless prior permission has been obtained from the subordinate commander, embarrassment to the staff officers may follow.

The staff officer must visit the troops in the forward area in order to learn conditions which will affect the details of his staff task. It is an accepted maxim that, when another command, and this applies to a subordinate unit, is visited, the permission of the unit commander must be first obtained. The better practice is to visit the highest headquarters in the area to be entered and request a guide from that command to accompany you during your stay in the area. Aside from the application of correct military procedure, there is a very practical consideration which compels the procuring of a guide. Troops in contact with an enemy often learn from bitter experience to be distrustful of any individual not personally known to them. The quickest solution to distrust in a combat situation is to shoot the person distrusted. The presence of a guide furnished by the unit occupying the area, and so known to the men located in that area, is a guarantee of trustworthiness that will dispel distrust and facilitate movement within the area.

Handling Request For Secrecy

A problem which frequently confronts a staff officer is the receipt of information accompanied by the suggestion that the information is personally confidential, the implication being that the commander does not need to know. Such a request for secrecy, whether specific or implied, demonstrates a lack of appreciation of the responsibility of a staff officer to his commander. A fine distinction must be made between a request to withhold information from a commander and a simple inquiry about a detail which follows as a result of a decision already made by the commander. The decision, insofar as that detail is concerned, can be immediately announced. New information must be communicated to the commander at once. Whatever information that may affect a commander's decision must be available to him immediately.

To summarize the principles of command through staff briefly, and to reduce staff procedure to the lowest common denominator, the staff officer, in all he says and does, is responsible to his commander only.

END

Photo Lab Technique in the Field

What is necessary in the way of equipment and housing to permit the utmost efficiency in the processing of films and prints under tropical conditions. By Colonel Elliott Bard

FOR a period of nearly fifteen months, from October 5, 1942, until January 1, 1944, Marine Photographic Squadron 154 operated over the Solomon Islands. Some experiences and methods of this squadron's laboratory personnel under conditions which certainly are not paralleled in stateside photographic work are related here.

Due to the dependence of many Marine field officers upon a VMD squadron for tactical and strategic information, the experiences and conclusions of this squadron should prove helpful not only to the officer directly responsible for developing and distributing prints, but to almost any combat officer as well.

The squadron's laboratory operated first from temporary plywood labs, later from trailer units, and, finally, from a semi-permanent base designed and built by laboratory personnel themselves.

The squadron did not receive its quota of photo trailers on time, and, consequently, was forced to use the portable type plywood darkroom for temporary field operations. These portable darkrooms were six by eight feet in size, with gable-type roof, and were completely light tight. If the squadron had been equipped with all of the necessary material, these darkrooms probably would have proved efficient. As it was, first experiences proved that a certain minimum was required if work was to be turned out properly and promptly. This minimum includes:

1. Two exhaust fans with twelve-inch blades, one for intake and one for out.
2. One stainless steel sink four inches deep, twenty-four inches wide, and five and a half feet long.
3. Three developing trays two inches deep, twelve inches wide and twenty-two inches long.
4. One hypo tray four inches deep, twenty inches wide, and twenty-two inches long.
5. One Smith developing outfit for aerial film.
6. Two military type printers, one nine by nine and one nine by eighteen.
7. One temprite unit, complete with trays and hose for permanent control work.
8. One electric water pump with sufficient piping for water supply and sewage system.
9. Two Home-Lite units with sufficient wire for power.

Although temperature ran very high in these huts, it was found that efficient work could be accomplished, and few difficulties were encountered in the development of film and prints. Every effort was made to cool the huts. Tarpaulins were

stretched over the tops, allowing an air space between the huts and the tarpaulin, cooling the interior of the huts considerably. Coral was used for decking material, and was sprinkled frequently with water, which made the huts more tolerable for personnel during the hot portions of the day.

Film was washed by manual operation of the Smith tanks and frequent changes of water, using five to eight changes per roll of film. One 300-gallon trailer tank was used for the water supply. This tank was kept cool by wet burlap spread over the top, and was sheltered under the shade of palm fronds. Print washing also was done manually in trays placed on a large table, prints being transferred from tray to tray with frequent changes of water for each transfer.

Drying Under Humid Conditions

Because of the excessively high humidity on damp days, drying of prints, and particularly of films, became a great problem in these plywood structures. Usually film and prints were dried on a Smith film dryer and Pako Print Dryer. On occasions, film was dried by looping it over white cord. Prints were sometimes dried on muslin. The film was slow to dry, and shrank back to its former size in the humidity, and special spools one-fourth inch wider than normal had to be used for the takeup on the dryer. Eventually a cut film cabinet was installed, with light bulbs and a thermador for heat. Aerial film was looped over lines in this cabinet, and this type drying proved successful.

Finished film had to be well protected from damp air. In the printing rooms, all precautions possible were used. After printing, aerial film was returned to the original can and taped up, and cut film was put in negative preservers and stored in metal file cabinets.

Upon arrival of the photo trailers, which are complete laboratories in themselves, many of the drying problems were simplified. The Smith dryer in the trailer can be hooked up to the hot water heater and hot, dry air blown from the heater onto the film with a suction fan. About two-thirds less time was involved in drying film by this method. Drying of prints on the muslin racks of the trailer also was speeded up by the hot air system.

Eventually, a base or semi-permanent laboratory was erected by photographic personnel. The lab consisted of two Nissen huts joined together.

This unit housed a camera repair section with complete shop facilities, darkroom for printing and developing, copy and enlarging rooms, finishing rooms, washing rooms, sorting tables, numbering table, film dryers, and print dryers.

Since aerial cameras are inclined to deteriorate in a humid climate, special cabinets heated by light bulbs, thermadors, and any other heating units available were constructed.

Bulk and Canned Chemicals Used

A lean-to wing was built against the Nissen huts to house the ice-box, office, issue room, and chemical mixing room. Film processing was done in two darkrooms and in three trailers. All film was developed by temperature and sight control.

An experiment was conducted by the photographic personnel to determine whether bulk or canned chemical supplies would be most effective for field use. It was found that all canned chemicals had to have acetic acid and chrome alum added. Bulk chemicals proved far superior. They process more film and more prints. But, since canned chemicals are efficient for trailer and port-

able photo labs, the squadron decided that half of the chemical supply of such a unit as this should consist of canned chemicals.

In this base lab, film drying was done by a Smith dryer, and Smith dryers in the trailer units also were used. A drying cabinet was used for cut film, which was subject to reticulation because of the humidity. Reticulation in cut film was overcome by using fresh hypo, and, on leaving the fixing bath, by placing the film in a formaldehyde bath before it went to wash. All film and prints were then washed in washing tanks and print washers designed for them. The washing water was eighty degrees most of the time. Print drying was done with matte Pako print dryers with excellent results.

Daily photo developing and printing output was greatly increased upon installation of this semi-permanent laboratory, particularly in the matter of aerial film. Thirty rolls of aerial film with five prints of each negative was the daily output of a twelve-hour working day. Production was not so high in miscellaneous work, and, if enlargements of various sizes were required, the



Prints are washed and dried in one part of the semi-permanent photo lab of VMD-154.



These are the portable plywood labs where VMD-154 laboratory workers first operated.

number of copies that could be made was reduced, of course.

The humidity which made film drying a problem also added to storage difficulties. Storage tents were erected before any other part of the semi-permanent base. The tents were floored with logs, and shipping boxes and crates were piled on the logs to help keep out some of the dampness. These precautions put loss of photographic material at a minimum. After the base photo laboratory was completed, much better storage facilities were available. One Quonset hut was erected with plenty of air space under the deck. Two other storage tents were put end to end, with a raised wood deck for good ventilation. This ventilation beneath the deck assisted materially in safeguarding supplies against the dampness.

Proper Transportation Is Essential

Provision for proper transportation is inseparable from the efficient operation of a good photographic laboratory. Each photographic trailer is supposed to have a ton and a half truck assigned to it. The truck carries water, material, and equipment supplying the trailer laboratory. The 300-gallon tank trailer proved particularly helpful, and one should be standard equipment for each photo trailer.

Transportation from field laboratory, photographic trailer, or base laboratory to photographic operational planes was in dire need of improvement at the time this squadron was operating. The ton and a half trucks assigned the trailers shake aerial cameras to pieces. A small, dual drive, specially designed, enclosed truck for camera transportation is sorely needed in all photographic squadrons of this type. Transportation also is needed for the immediate delivery of all finished work, so that it will get to interpreters at the earliest possible moment. A jeep or two should be assigned to each photo lab to overcome this.

Suggestions to Increase Efficiency

Other deficiencies in equipment as noted by this squadron's photographic personnel included:

1. Failure to receive on time the oscillating fans, temprite units, and exhaust fans that were ordered.

2. Inadequate facilities for print washing in the otherwise efficient trailers. A Pako print washer should be assigned to and installed in each trailer. This washer should be specially designed to take the place of the unsatisfactory canvas washer the unit now uses. A print dryer of the small roller type, gasoline heated, would be a great help and increase the efficiency of this type of photographic trailer.

3. Lack of space in a base lab can handicap work of a highly trained and large photographic staff. The two Nissen huts and lean-to used by

this squadron should have been at least four to six Nissen huts put together in a double H pattern, with a large patio in the center. In tropical climates, the base lab should be well covered and screened. When working in cold climates, glass windows can of course be substituted in place of the screening.

4. Two 600-cubic foot ice bases are necessary if film and delicate photographic papers are to be preserved. This squadron managed with one 600-cubic foot icebox, but the waste would have paid for the much needed additional box. For instance, vectograph kits cost \$1,350 and replenishers \$1,150. A base lab's standard stock includes three kits and four replenishers, and the only way to preserve this equipment is to keep it properly refrigerated.

5. Air conditioning and humidity control are needed direly to overcome the inefficiencies encountered in a base lab. This holds true whether the base laboratory is located in the tropics or in a cold climate.

6. A purification unit is needed to take out all water impurities found in the usual chlorinated and iodized drinking water the photo labs have access to.

7. Insufficient electric power handicaps the work of the photographer, the printer, and the highly trained technician. Photo labs should have two 75 KV power units, one for use and one for standby, with skilled electricians in charge of this power house. The power should be controlled by a voltage regulator or transformer so that the current power will not fluctuate. The current supplied from these electric power units should only furnish power to the photo lab, so that they can continue working regardless of the time of day or night. There should not be a shutdown of the photo lab by the loss of power when someone wants to see a squadron movie or make some other use of electrical equipment.

8. It was found that there were not sufficient washers and dryers at the base photo lab to carry the output of photographic prints. Print dryers of matte type take five minutes from the start until the dry prints come out. There are some dryers on the market that have iron cores that can be electrically heated. They dry prints in about three or four seconds. It also is suggested that larger washers, or twice or three times the present amount of washers, be allotted to this type photographic squadron.

9. All enameled ware should be stainless steel. This unit made its own sinks, trays, hypo trays, and large roll paper developing tanks out of stainless steel. There was no deficiency noted in this equipment. Stainless steel is the only metal that trays, sinks, and other photographic equipment should be made of when photographic squadrons take to the field.

Identifying and Using Japanese Equipment

The Japanese Type II

(1922) Light Machinegun

By W. H. B. Smith

This is the fourth article by W. H. B. Smith, Military Arms Consultant of the National Rifle Association on enemy arms.

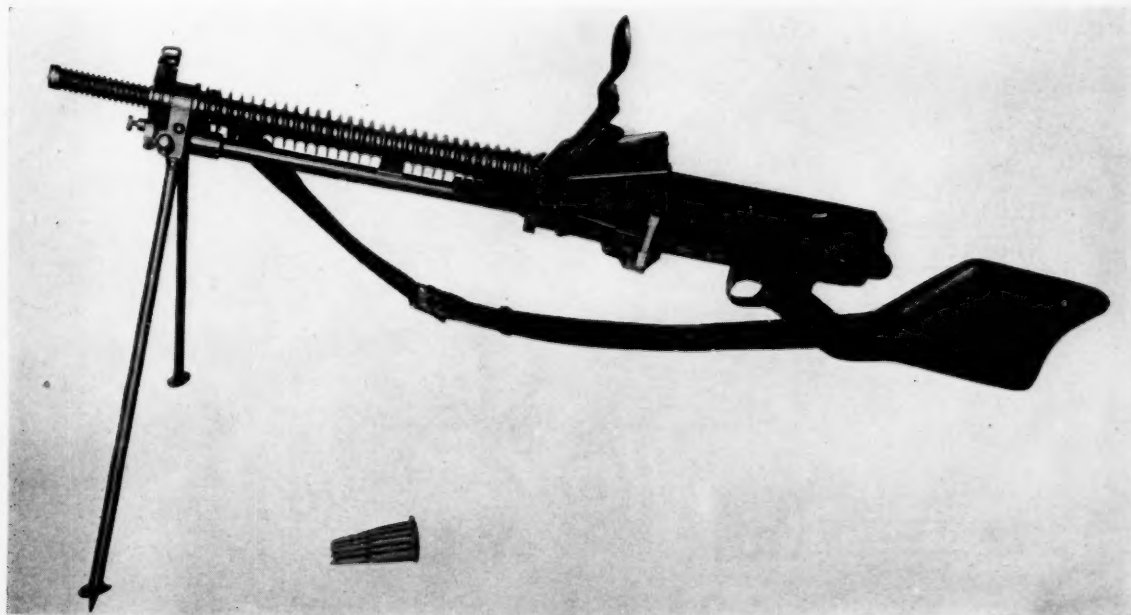
THIS gun is popularly called the "Nambu," after a Japanese general who had much to do with its design. It was the first Japanese attempt at original designing in the field, and was introduced in 1922. This weapon—undoubtedly the poorest piece of light equipment used by the Japs—was extensively issued and used until 1936. In that year it was superseded by the excellent LMG 1936. Its caliber is .256 (6.5-mm). However, since large numbers of this type are in use and will be encountered particularly on the Asiatic Continent, every Marine should have at least an idea of what they look like and what to do with them.

IDENTIFICATION: This is easy. There are just two things to look for. First, on the left side of this gun, a large metal box (or hopper) sticks out just to the rear of the chamber end of the barrel. Six clips of cartridges (five cartridges to each clip) are held in this hopper. A follower handle which looks like an oversized

tablespoon projects from the rear of the hopper. Second, the shoulder stock is like nothing ever made by civilized man. It is warped far over to the right to provide an offset so the gun can be sighted. An oil well mounted on top of the receiver prevents sighting straight down the barrel.

LOADING AND FIRING: (1) Push up the spoon-like handle which is attached to the magazine follower jutting out from the rear of the magazine hopper. This will lift the heavy follower on its hinge against spring tension.

(2) Place six clips of Japanese .256 (6.5-mm) cartridges inside the hopper with the bullets pointing toward the muzzle of the gun. (NOTE: To function properly, *this gun requires special ammunition!* This ammunition is identical in every way with the standard Jap .256 *except* that it uses a short powder load. Since Jap small arms ammunition is not marked in any way to permit identification, you won't be able to tell if the cartridges are all right unless you find them in their pasteboard cartons. If the cartons contain three clips of 6.5-mm (.256) cartridges, *and have a letter "G" stamped on the label*, they are for this LMG; such cartridges are loaded with 30 grains of powder and give a muzzle velocity of about 2,400 feet per second. If the cartons *do not* have the "G" the ammunition is loaded with 33 grains of the same kind of powder and is intended for rifle



Nambu LMG M1 922, Caliber 6.5-mm

use. Rifle ammunition will jam this gun faster than you can clear it.)

(3) Pull the handle down. The follower will be pushed down by its spring to keep the cartridge clips under tension.

(4) Draw the operating handle on the left side of the receiver back as far as it will go. This will pull back the piston, operating slide, and bolt assemblies, and they will be held back by the sear against the tension of the operating spring, which is mounted behind the bolt. The first cartridge will be pulled from the bottom clip and lined up in the boltway. Then push the handle forward so the slide will not have to carry it forward.

(5) Like the BAR, this gun fires from an open bolt. When the trigger is pressed, the sear is pulled down out of engagement and the operating slide carries the bolt and lock forward to chamber, lock, and fire a cartridge.

(6) This gun fires full automatic only. It will continue to fire as long as the trigger is held back and there are any cartridges in the hopper, since the gas tapped off from the barrel drives the piston attached to the slide to the rear to function the action.

Anyway, that's what General Nambu's book says. After you have some experience trying to make the thing keep firing, you'll undoubtedly reach the conclusion that, when it comes to tell-

ing the truth, the good general is in a class with Tokyo Rose and Ambassador Kurusu.

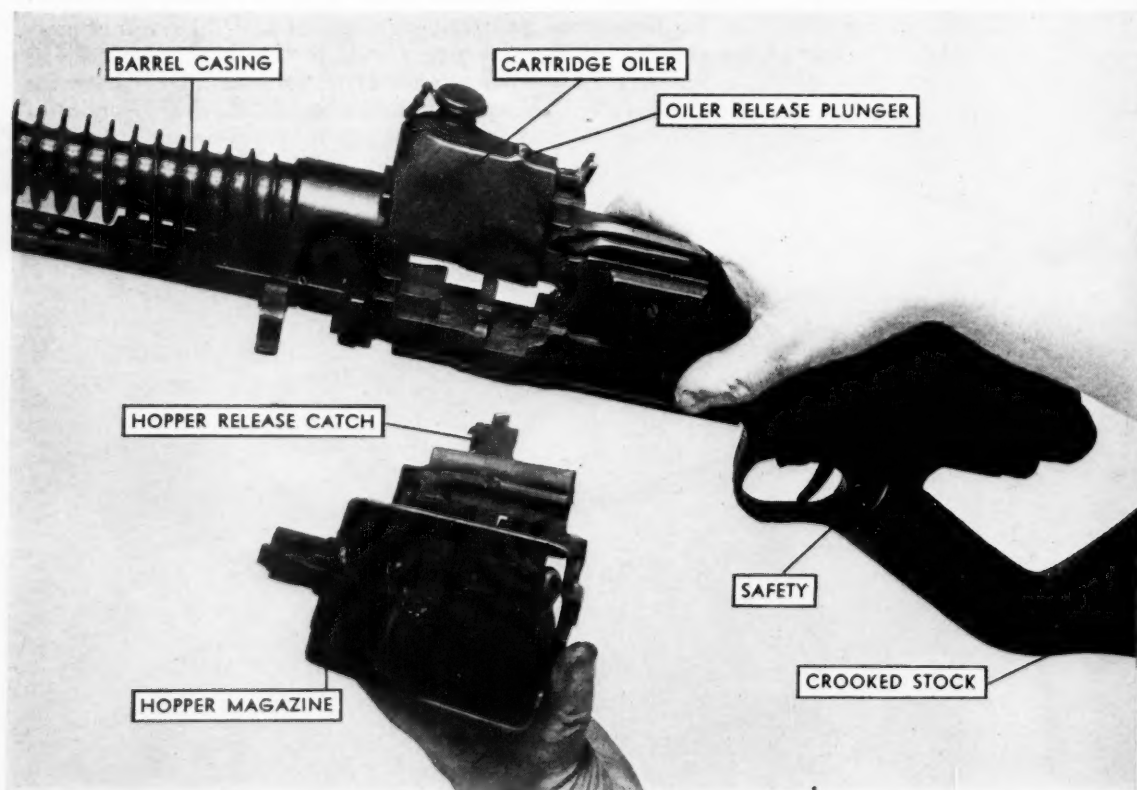
(7) **Safety:** A safety catch is mounted on the left side of the trigger guard just behind the trigger. Push it up and it locks the action.

MOUNTS: This gun is normally fired from a prone position. A bipod mount is fixed to the barrel near the muzzle. However, it may sometimes be mounted on a special tripod, which elevates it as much as four feet above the ground. The tripod is designed to permit both elevating and traversing the gun. The elevating device may be unfastened quickly, enabling the gun to move freely so it may be swung vertically and horizontally for use against aircraft.

However, whether you see it in use as a machine rifle fired from the prone position or as a light machinegun fired from the tripod, you may recognize it instantly from the peculiar hopper feed-box on its left side and by its crooked shoulder stock.

OPERATION: When the bullet traveling down the barrel passes over the gas port, a small quantity of gas passes into the cylinder and drives back the piston which is attached to the slide.

The slide cams the bolt lock up and the firing pin back into the face of the bolt. The weapon is now unlocked. As the piston and slide assembly continue backward, the extractor in the face of the bolt pulls the empty cartridge case to the



To withdraw hopper type magazine of Nambu

rear. When the case clears the chamber, the bolt hits the rear of the pivoted ejector, which drives the empty cartridge case out the ejection port in the right-hand side of the receiver. The operating (or recoil) spring behind the bolt is compressed and the rearward action continues until the bolt lock strikes the buffer which halts the rearward action.

As this rearward motion is taking place, an intricate feeding system cams the feed slide over to the right and enables racks to pull a cartridge from a clip. As the cartridge is fed into line in front of the bolt, it operates an oil pump, which sprays oil on each individual cartridge case.

The oil chamber is directly on top of the receiver in line with the feed hopper. It must be kept supplied with oil. There is no period of slow extraction of cartridge cases in the Nambu. Therefore, if each case is not automatically oiled, the sudden jerking action of extraction may occur while the case is still adhering to the chamber walls. This may tear the head off the cartridge case and jam the gun hopelessly.

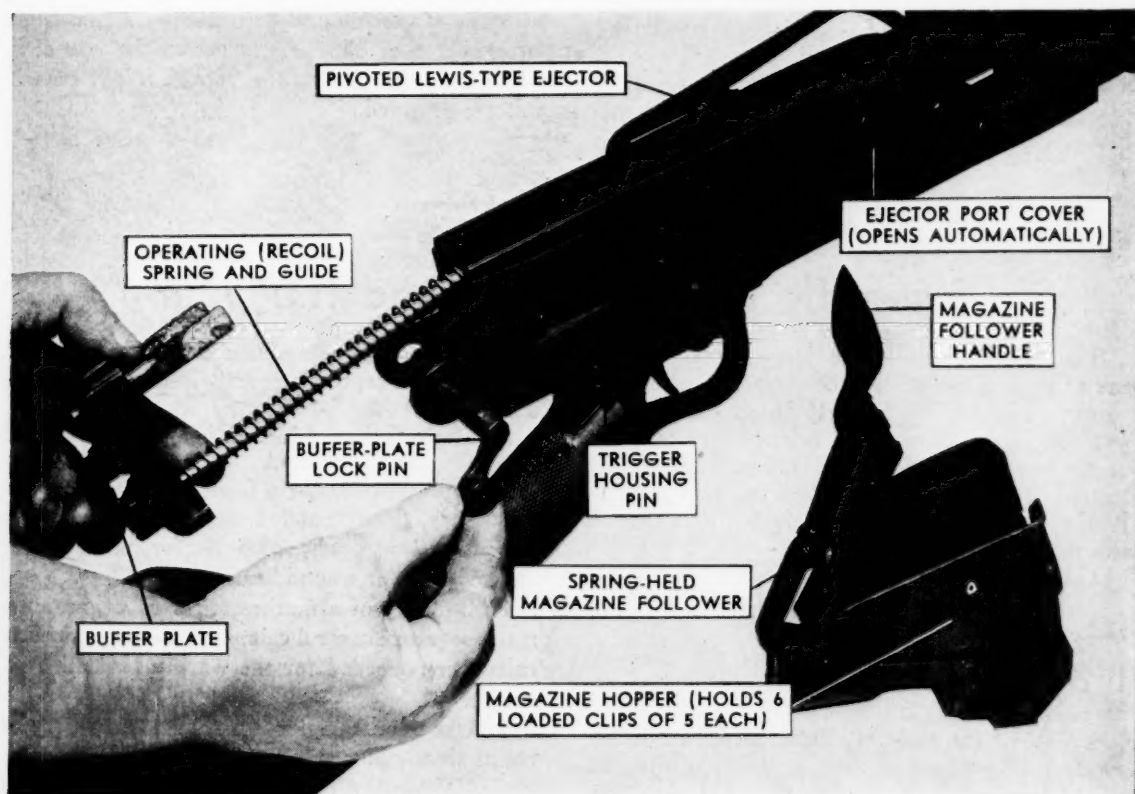
A gas regulator is fitted to the front end of the gas cylinder. It has five holes and can be set to increase or decrease the amount of gas as required.

UNLOADING: Remember that this gun fires from an open bolt, and that, once a hopper has been loaded and the cocking handle pulled back, a

loaded cartridge is in the boltway, where it cannot be removed unless the hopper is taken out of the gun itself. This cannot be emphasized too strongly.

There is a lock on the right side of the receiver (see illustration on preceding page) where the feed mechanism protrudes through. Pulling this lock back permits the hopper to be pulled out from the left-hand side of the gun. This mechanism rusts up very easily, and, if the weapon has not been given good attention, it may be necessary to drive it out.

DISMOUNTING: This is quite simple. The buffer plate pin passes through the rear of the receiver and the buffer from the right-hand side. Turn this to a vertical position downward and pull it out. Control the buffer back plate and recoil spring and guide as you withdraw them from the rear of the receiver. (See illustration below.) Then pull the cocking handle directly to the rear. It will bring the operating slide and attached piston, together with the bolt and bolt lock with it. They may be removed. The cocking handle itself may be taken out by lining up its lugs with the openings on the side of the receiver and pulling out to the left. Pressing down the stud which will be found in front of the rear sight permits the oil pump to be slid out of the receiver to the left. Punching out the housing pin between the trigger guard and the receiver just to



First step in dismantling the Nambu

the rear of the trigger, *from right to left*, will permit the trigger guard assembly to be slid out the rear of the receiver on its guide. A lock plate on the rear, just behind the gas piston screw, may be removed to permit the barrel housing lock to be pushed out to the front, and the barrel housing may then be unscrewed from the receiver and the barrel withdrawn.

STATISTICS: These guns with the permanently attached bipod mount vary in weight of individual guns from about 22.5 to 23.5 pounds. Barrel lengths have been checked from about 18.5 to 18.9 inches. Overall length averages about 43.5 inches. Japanese manufacturing standards and systems are such that specific figures seldom apply to their weapons—measure or weigh ten samples and you'll usually get ten sets of figures.

The sights, which are offset, are graduated from 328 to 1,640 yards; and are not provided with windage adjustment.

Maximum range is in the neighborhood of 4,300 yards, though, of course, the really usable range is only a fraction of that distance.

The operating (or cyclic) rate of fire runs from 500 to about 700 per minute, depending on the gas port used, condition of the weapon, condition of ammunition, and similar variables.

Normally, this gun is fired in burst of one clip (five cartridges), and it is possible to fire about 30 clips in a minute—if you're lucky enough to get perfect feeding, oiling, and gas operation. It is a real pleasure to be able to report that this very seldom happens.

DESIGN: In both appearance and operation, the Nambu is quite unlike any other light ma-

chine weapon ever manufactured. While the gas operation and locking principles were adapted from the French Hotchkiss, feeding and oiling systems are direct developments of Japanese arms "genius." Like most direct Japanese inventions, the theory is a great deal better than the actual practice. The idea in developing the unusual feed in this weapon was to get away from the old Hotchkiss idea of a long metal strip which has to be fed into the side of the gun and which usually requires the attention of an assistant if the gun is to function properly. (The *standard* Hotchkiss principle, as used by the Japanese in their heavy model 92 machinegun, has resulted in an excellent, if unduly heavy, weapon.)

The overall design and operation is so very much inferior to the later model 96 and model 99 Jap LMGs, that only second-line troops are likely to be found equipped with the Nambu. The proper care and cleaning of the weapon, particularly in tropical areas, is a problem of the first water, and, should it ever be necessary for you to make extended use of one of these weapons in an emergency, make very sure that the oil chamber is kept filled, and that the feed hopper in particular receives very careful attention and oiling. While the gas action requires constant attention, the feeding system is the real danger of serious jam trouble in this gun.

Remember, however, that this Nambu will kill you just as quickly and permanently as the finest Browning ever built if you get in the way of it when it is operating. *Don't laugh it off*, even if you are tempted.

Scientific Developments and the War

The influence of war on science is evident from the following list of the ten most important advances in science made in 1944, as compiled by Watson Davis, Director of Science Service. Nine of the ten items chosen by Mr. Davis are closely related to the war. Showing how medical progress is stimulated by war, four of the ten items are in this field.

1. Application of jet propulsion to aircraft.
2. Use of robot bombs and self-propelled large rockets in warfare.
3. Successful widespread use of the chemical DDT as an insecticide, particularly against the carriers of malaria and typhus.
4. Use of the mold chemical, penicillin, in the successful treatment of a wide variety of diseases.
5. Chemical impregnation of wood that converts soft woods into hard.
6. The use of the silicon family of synthetic resins in waterproofing and insulating various materials.
7. The splitting of human blood seven ways to give albumin for shock, gamma globulin for measles preventive, fibrin foam and plastic for use in surgery, fibrinogen for use with thrombin for cementing skin grafts, globulin for blood typing, and red cells for wound healing.
8. Building of a mathematical robot, an automatic sequence control calculator to speed intricate calculations needed for the war and scientific research.
9. Use of ultraviolet light and triethylene glycol in air to reduce the spread of airborne diseases.
10. The entry into the war of the world's largest bomber, the B-29 Superfortress.

The War and After

A famous author tells why we are

fighting and indicates a course for the future. Civilization will be destroyed unless we use

the tools of technological and scientific research properly. By James Truslow Adams

AS I see it, our course after the war is absolutely connected with the reasons why we are in the war at all. So we have two questions: Why are we at war, and what may be "the shape of things to come"?

It seems almost incredible that anyone does not know the answer to the first, but there are people who ask (though I imagine very few in the Marines). These people belong in many different groups: mothers who are so deeply stirred emotionally that they cannot *think*, even if they have the background of knowledge; some old time isolationists who still believe America can be a land apart, and that, if an enemy did come, "a million men," as W. J. Bryan said at the end of the last century, "would spring to arms between sunrise and sunset." They might spring, but, if they had no arms, ammunition, training or leadership, what then? There are also the pacifists; and the groups professionally hostile to some of our Allies or friendly to our enemies; "Ismists"; those who do not realize that the world has completely changed in time and geography in a few generations. Many of these are wholly honest in their own opinion, though dangerous, but, fortunately, they are today an extremely small fraction of our 138,000,000 people.

A Heritage Worth Fighting For

What do I think we are fighting for? And *why* do we have to fight?

When Columbus sailed from Palos on that August 2 to find Cathay (the Orient of spices and other riches), and on October 12 found instead an island off the American continent, the very existence of America was unknown, and the perils of a three months' crossing over an unknown ocean deterred the hardiest souls. But America was discovered, and proved to be the finest and richest country for ordinary men in the world. It was so rich and free that it attracted millions on millions of the common men and women of the Old World. The American Dream came to be dreamed. The ambitious, the daring, those who wanted to be free of the social and economic trammels of Old World society came here, often under fearfully hard conditions. They built America. They built it so fast that in less than three hundred years the 3,000,000 square miles which is now the continental United States became covered with towns, cities, industrial plants, farms, hospitals, schools, universities, and was contributing on a princely scale to the welfare of other peoples.

In natural resources, climate, industries, energy, it was the richest prize on the globe. For a long time, 3,000 miles of stormy ocean on the east and the many more thousands of miles of the Pacific on the west, seemed to isolate it. In its heart was the wide valley of the Mississippi, which has been called the finest abode for the human race on earth. That seemed forever protected by the ramparts of the Appalachian range on the east and the Rockies on the West. That valley was the heart of the continent, the heart of democracy, and, for obvious reasons, the seat of our most complete isolationist feeling.

A False Feeling of Security

Actually, we had never been wholly isolated. We had shared, usually a little late, in the changing currents of world thought. We had had some sort of war each generation, but we felt remote and safe within our barriers of seas and ramparts of mountain ranges. We were amused but unconvinced by Jules Verne, who visualized a boat which could operate under water, and by H. G. Wells, who, in 1905, predicted that airplanes *might* be used in war by 1950. Amusing but, of course, fantastic!

Well, here we are. What has become "fantastic" are not the suggestions of fiction writers but the shrivelling of space and time, and the unbelievable increase in the tempo of technical invention. Anything can happen. One very definite thing *has* happened. The U. S. A. is no longer isolated by distance, oceans, or mountain barriers. That is that, and anyone who does not believe it is blind. What else happened? We were rich, generous, peaceful, and almost wholly unprepared for a world war. We were the richest prize in the world for a predatory nation to seize. Suddenly and simultaneously, two predatory nations arose, Germany and Japan. We were not only threatened but attacked, across the oceans from both sides. Japan attacked at Pearl Harbor without declaring war, after the most cynical international hypocrisy of which any nation has ever been guilty. Germany, and her ally, Italy, did declare war, and the game was on. We had not provoked it; we had not even properly prepared for it. There is a story, I think by Kipling, about a group of newspapermen on their way to England after the South African War of 1900. Their ship was steaming over placid seas when suddenly there was a terrific turmoil in the water as two huge monsters of an early geological period rose

from the hidden depths and engaged in a terrifying fight for supremacy. The newspapermen wrote the account, but then all agreed they could not use it. No one in England would *believe* it.

That is something like what has happened to us, forty years later, but we *have* to believe it. It must be told, and *is* being told in the pouring out of the accumulated treasure of civilization—treasure of capital, culture, opportunities, human lives, and human love. In the last half of the 19th century, not only did the world seem at peace, except for minor forays here or there, but science, much vaunted science, appeared to be opening an ever widening control over the universe and an ever rising standard of living for all men.

That was the ship we were sailing on over seemingly quiet seas, with a rainbow at the horizon's edge. We had a heavy jolt in World War I, but did not learn our lesson. Then, for us, as for the newsmen I have mentioned, two monsters arose from the depths of the past. Barbarism and unbelievable savagery, everything in the Wagnerian operas and other glorifications of paganism suddenly confronted us, not as art but as war. The thin crust of what we had thought a solid civilization broke, and we found ourselves in the flames and liquid lava of an earlier unformed world.

Enemies on Our East and West

We were faced across the Atlantic by Germany, which had been building up the best organized war machine in world history. In their blitzkriegs they overran, plundered, and enslaved practically all of Europe and North Africa. Only the island of Britain stood firm against the overwhelming flood, by a miracle of courage and tenacity. In the Orient, the Japs had conquered Manchuria and all north China, and were moving steadily across the Pacific. They took the Philippines, the Dutch East Indies, Indo-China, any number of other islands and territories, and were threatening India, Australia, New Zealand, Alaska and our Pacific coast.

This is no old-fashioned war of limited scope for limited objectives. We were suddenly confronted by these two nations in all their bestiality. They were not the Germany or the Japan of 1850. They were two peoples who had, without warning, reverted to savagery and had combined

to conquer the world and enslave it for their own use.

That is what we are at war for—to save freedom, to save civilization, to save opportunity for the common man, as against the savagery and brutality from which we thought Man had risen.

As I have said, why we are at war at all is inextricably bound up with the shape of things after the war. What has happened could happen again, if precautions are not taken. We have been jolted out of our smug sense of security. We have learned that our belief that science would make men "healthy, wealthy and wise" may be wrong. The tools of technological and scientific research may destroy as well as build civilization. We have learned that there may still be fearful crises in Man's upward advance, and that there are desperate occasions when "a feller needs a friend."

There, as I see it, is the blueprint for the future. It is too early to put in all the details, but the outlines are clearly defined. There may be no peace conference this time in the old-fashioned sense, but there must be plans, and at Dumbarton Oaks and elsewhere they have begun to take shape. Briefly, those nations which believe in civilization, which believe in the right of the ordinary man to develop to his fullest capacity, have got to resist those which preach that the State is all and the individual, with his hopes, desires, and ambitions, is nothing. They have got to assume responsibility, and they have got to provide force in the background. If we Americans want safety in the future, we shall have to join other nations who want it also, and will help to see that we all get it, jointly. Thus, we may build a world order in which the ordinary human being will have his chance, in which science can build and not destroy.

We have become the most powerful nation on earth, thanks to our location and natural resources, our character, our individual freedom, our ambition, and our "know how." We have a continental population of 138,000,000; almost the whole of the world's gold supply; a fleet twice as big as that of any other people; the greatest air force, with bases all over the globe; the greatest industrial plant and output. With power goes responsibility. With power and acceptance of responsibility come friends and allies. If in some way we shirk that responsibility, we may, and should, lose all the rest.

Danger in Discarded Material

Background of a recent Headquarters order making it mandatory that all personnel inspect trash for ordnance material, live ammunition, or explosives prior to placing it in an incinerator has been explained by Colonel J. E. Curry of the Discipline Division, Headquarters, Washington.

Colonel Curry stated that a recent administrative report disclosed that an enlisted man was seriously injured by explosion of a five-inch Navy shell while he was burning trash in an incinerator.

Marine Rifle Squad in Combat—2

Conditions that govern the employment of formations and actions by the rifle squad in the offense. The importance of leadership becomes evident, and is often decisive in the offense.

Offensive action against the enemy does not necessarily require superiority in numbers. Primarily it is achieved by a combination of higher morale, a higher quality of leadership, better training, and better equipment.

THE first stage of offensive action is movement toward the enemy in route column. In this formation, the squad may march in the main body, in the advance guard, as a connecting group, as a flank patrol, or as part of the rear guard. During halts it may be detailed as one of the elements of a march outpost.

During the march it is essential that the column be protected against surprise attack. This protection is provided by employing from one-third to one-fourth of the command in the capacity of advance guards, flank patrols, and rear guards. Antiair antitank guards are detailed to give warning of the approach of hostile or unidentified aircraft or armored vehicles.

Distances between elements of the column on the march will vary with the type of terrain and conditions of visibility. When moving through close country, under conditions of poor visibility, the distances are considerably less than those ordinarily employed.

The advance guard provides for the uninterrupted advance of the main body. It does this by reconnoitering the route of advance, attacking and destroying small hostile units and taking and keeping under fire strong enemy forces, thus enabling the main body to deploy and prepare for offensive action. A rifle squad will often be detailed by the advance party commander to act as the point of the advance guard. See Figure 1, page 40. The mission of the point is to protect the advance party from surprise attack by the enemy from the front. In order to accomplish this mission, the point investigates likely ambush positions, such as natural defiles, small villages, stream crossings, and fords. Its investigations must be rapid, aggressive and thorough. The point attacks and destroys or drives off small enemy forces. If large forces are encountered, the point engages them, thus allowing other elements of the advance guard to deploy.

In his orders to the squad leader in command of the point, the advance party commander outlines the enemy situation as it is known to him and the mission of the column. He indicates at what distance the point is to precede the advance party. On a narrow and difficult jungle trail, the distance will naturally be less than when moving over

open terrain under conditions of excellent visibility. The point regulates its rate of march on the advance party and maintains the distance prescribed by the commander of the advance party.

The squad leader in command of the point prescribes the formation to be used. On a narrow trail or track in thick country, the formation may be a column. In open terrain or on a road, the squad may adopt a wedge formation. The formation will be such that the squad can observe to the front and to both flanks and can bring maximum fire to bear forward or to either flank. Continuous all around observation is essential and is assured on the march and during halts by assignment of observation sectors. A method such as that shown in Figure 2, page 41, may be used.

Two points are important to remember: the squad leader moves in the position from which he can best control his squad, and the point is responsible for its own security at all times.

Conduct of the Point on the March

The squad leader is responsible for the conduct of his squad at all times. When the squad is acting as the point, all members must realize that they are responsible for the security of the column in the direction of march.

The squad must observe strict trail discipline. Proper distances must be maintained. Smoking and talking are not permitted. The squad must be alert and vigilant. Sectors of observation responsibility are assigned to each fire team and to each individual within each team. Weapons are carried ready for instant use, loaded and locked, with bayonets fixed.

When the point is fired on by the enemy or discovers enemy positions, the squad leader makes a quick estimate of the situation and takes immediate aggressive action, using fire and movement. This action will usually be in accordance with a prearranged plan. He reports the contact to the commander of the advance party and informs him of the enemy situation and the action he is taking.

The Squad as a Flank Patrol

Regardless of the size of a marching column, its flanks must be protected. Squads are often detailed as flank security detachments. When so de-

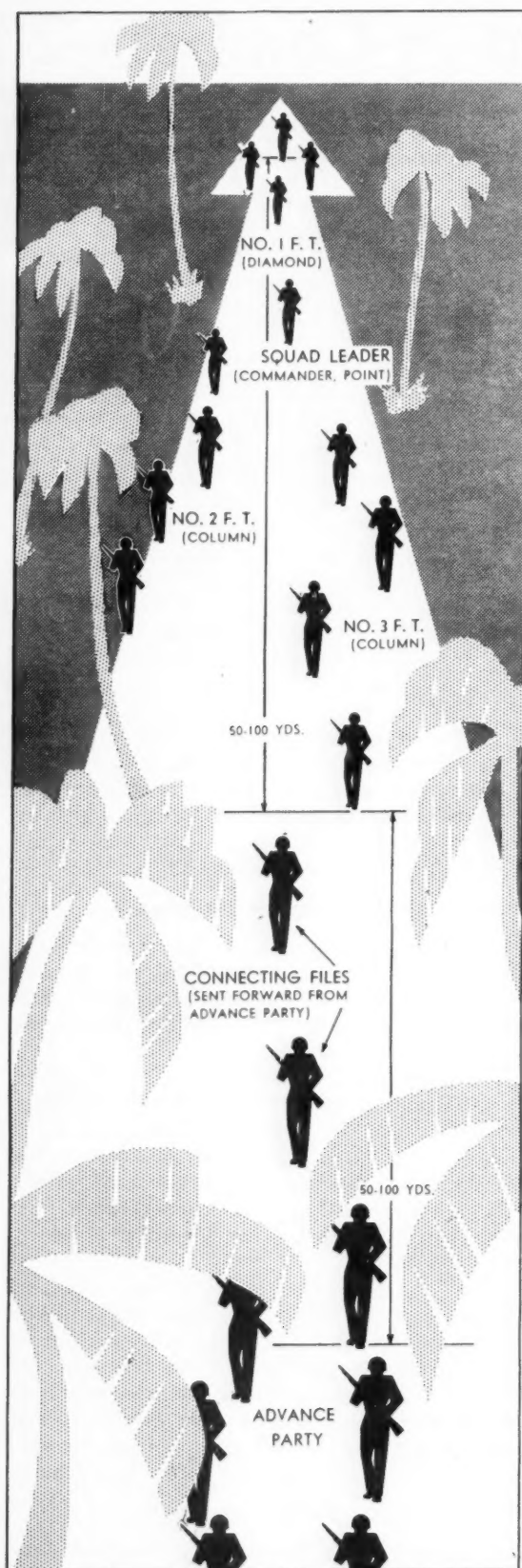


Figure 1. Squad as point of advance guard.

tailed, they move parallel to the column and at prescribed distances from it. In thick or rugged country, where flank security detachments are required to cut or break trail, they must be relieved frequently, as they cannot keep up with the column.

The column commander will maintain contact with flank security groups. If terrain and vegetation permit, connecting files are sent out from the column. If terrain is rugged and vegetation is heavy, as in the jungle, contact is maintained by small patrols, which are sent out from the column periodically.

When the squad leader has received orders detailing his squad as a flank patrol, he gives his orders to the squad and leads them into position. Formations and distances will vary with terrain and visibility.

The mission of the rear guard is to protect the column from surprise attack or harassment from the rear. If the column is withdrawing before the enemy, the rear guard fights delaying actions to protect the withdrawal. For example, the rear guard may be ordered to hold the enemy off for a specified period of time to permit the column to cross a river safely or to take up a defensive position. Elements of the rear guard successively delay the enemy to enable the element next preceding to take up a suitable defensive position. When this has been accomplished, the element in contact withdraws. The withdrawal should be made around the flanks of the unit in position. See Figure 3, on page 43.

A single squad is rarely employed as rear guard. It might be assigned as rear guard for a combat patrol. When the squad is detailed as rear point of the rear guard, its formations and conduct are similar to those prescribed for the point of an advance guard.

Element of a March Outpost

When the column makes temporary halts for the purpose of eating, to re-establish control or for other reasons, security is assured by the establishment of a march outpost. The mission of the march outpost is to protect the halted column from surprise. If attacked, the march outpost engages the enemy to allow the column time to take up a position to repel the attack.

The squad may often be detailed as an element in a march outpost. When so detailed, the platoon commander will inform the squad leader of the situation, the outpost position the squad is to occupy, to whom and where reports of enemy activity are to be sent, and the anticipated duration of the halt. The squad will not abandon its outpost position until it receives explicit orders to rejoin the column.

On arrival at the prescribed location and after a hasty reconnaissance is made, the squad leader

positions his fire teams in order to observe and defend all avenues of approach leading into his sector of responsibility. The squad leader insures alert observation by detailing observers in pairs and arranging for frequent reliefs.

The Approach March

Approach march formations are assumed to bring the units of a column close to the enemy in readiness for action and with minimum losses. The approach march begins when the elements of a force develop from route column formation to a formation of several columns. Development is a lateral extension. It takes place when the column comes within range of hostile artillery fire, or when, as a result of information received, contact with enemy ground forces is believed to be imminent.

Squad formations are not necessarily changed when a platoon leaves the route column. The platoon may march with squads in line, with one squad forward and two back, or with two squads forward and one back. Squad leaders regulate the rate of march and maintain the prescribed intervals by guiding on the base squad designated by the platoon commander.

During the approach march, squad leaders adjust the formations within their squads as dictated by terrain and visibility. They must be alert to receive orders or signals from the platoon commander. A squad may be deployed across the platoon front to cover its advance during the approach march.

The platoon commander orders the deployment of his platoon, and prescribes the initial formations for the squads. Thereafter, squad leaders order formations in accordance with the terrain, the frontage assigned, and the likelihood of coming under hostile observation and fire. Formations of the squad may be in column, in line, or wedge.

"Squad Column" is vulnerable to fire from the front, and requires a change in disposition to employ the weapons toward the front; however, this formation is easily controlled and maneuvered. It is especially suitable for narrow, covered routes of advance, for maneuvering through gaps between areas receiving hostile artillery fire, and for moving through woods, and in fog, smoke or darkness. The depth of a squad column averages 60 to 100 yards.

"Line" enables the squad leader to develop the maximum fire power to the front in the shortest time. It is more difficult to control, and lacks maneuverability; but it is less vulnerable to fire from the front. It is suitable for rapidly crossing an area exposed to hostile long range machine-gun or artillery fire which cannot be avoided.

"Two fire teams forward, one fire team back" and "one fire team forward, two fire teams back" are formations which provide security to both front and flanks, favor maneuver and control,

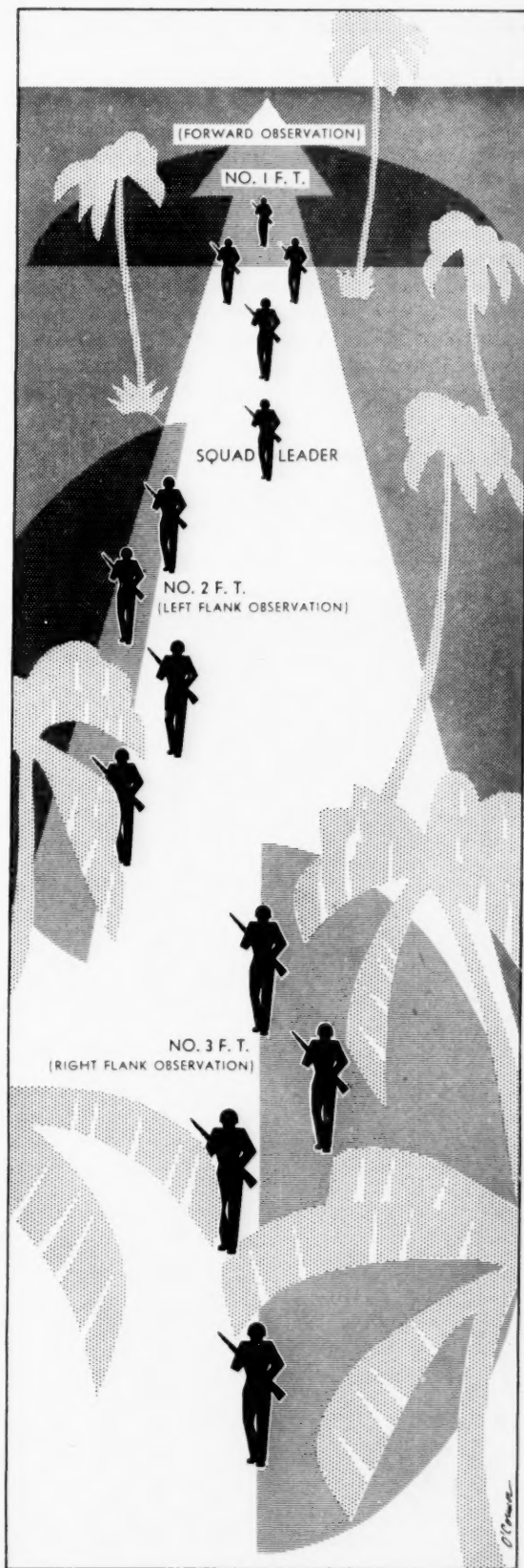


Figure 2. Fire team sectors of observation.

and also provide flexibility in meeting new tactical situations.

A formation with fire teams echeloned to the right or left rear may be used to protect an exposed flank. This formation permits maximum fire to be delivered promptly toward that flank.

If the squad comes under long range machine-gun fire, or that of enemy mortars or artillery, the squad leader may order the entire squad to deploy as skirmishers and to rush across the area; or he may move his squad across such exposed terrain by successive movements of fire teams or individuals. The squad leader designates in advance the area where the squad is to reform when the movement across the exposed terrain is completed.

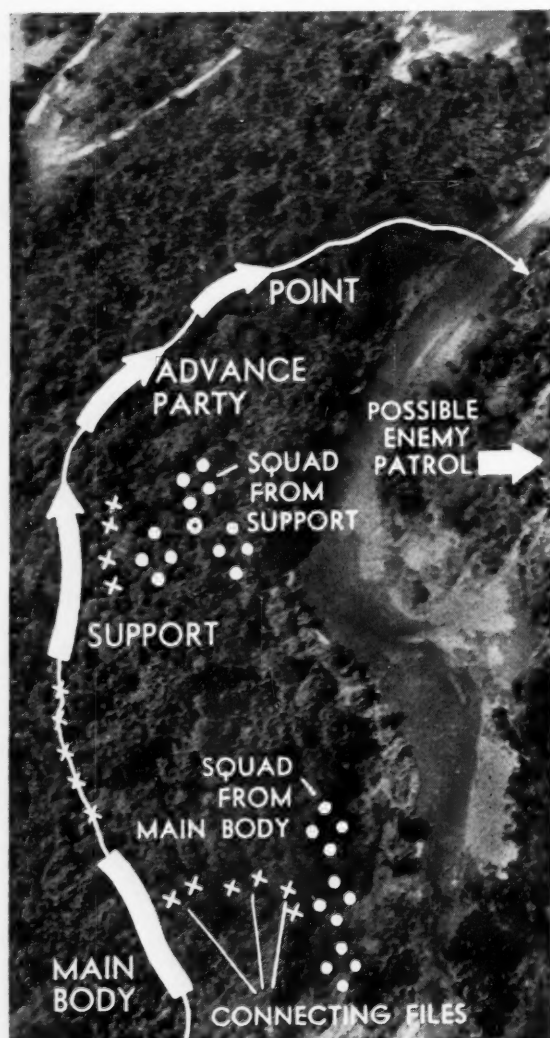
The Squad in the Attack

In the attack, the squad assists in accomplishing the platoon mission by driving the enemy from

his positions within its zone of advance. In order to insure effective control, the squad moves from one clearly defined terrain feature to the next as it advances. The squad leader selects features within limits of visibility.

Prior to launching an attack, squads are halted in a company assembly area, which is usually in defilade and well concealed from hostile observation. Here the men are directed to drop excess equipment, such as packs and rolls, which will not be needed during the attack. Additional ammunition is issued, and final orders for the attack are delivered.

When in assembly areas, squad leaders disperse their men within the area allotted them by the platoon commander. Platoon security, including anti-air, antimechanized guards, is established, and foxholes are dug. After receiving the attack order, the platoon commander sends a runner back to bring squad leaders forward to a point designated



Example of Order When Squad Serves As a Flank Patrol

"Can you all see this map? Here we are. We know there are at least two strong Jap patrols operating over to our right along the east bank of the Bula River.

"The company is going to march north, upstream, along this trail for a couple of hours before it heads east and crosses the river to get at those patrols, surprise them and knock them off.

"Our squad is to move along about 75 to 100 yards to the right (east) of the company and keep an eye to the right flank.

"We will travel generally on a magnetic azimuth 20°. The jungle is pretty thick out there, and we're going to have to cut some. We'll move in a column of files until we get upstream where the growth thins out. The company will halt on the hour for twenty minutes and will send out a fire team to contact us at that time.

"Zablski, you lead off with your fire team. Brown, you follow Zablski. Harris, you follow Brown. I'll move along with Zablski. Everything understood? It is now 0900.

"Move out."

by him. While awaiting their arrival, he makes as thorough a reconnaissance as time permits of the ground over which the platoon is to attack. On the arrival of the squad leaders, the platoon commander orients them on map and ground. He does this by indicating a cardinal direction and by pointing out terrain features on both map and ground that will be mentioned in the order. He then issues his order, which will, in most cases, be very brief.

After receiving the platoon commander's order, squad leaders study the ground over which their squads will move. Conditions of visibility and the time factor will often preclude more than a limited, hasty reconnaissance. The squad leader's order will be given to the squad in the assembly area, during a brief halt which may be ordered for that purpose as the squads move up toward the line of departure, or in a cover position just in the rear of it.

Supporting Fires

While troops are in assembly areas, while they are moving up to the line of departure, and while they are in cover positions waiting to cross it, supporting arms and weapons fire on point and area targets within the framework of the enemy's defenses. This preparatory firing may be carried out by any one or several of the following arms and weapons: aircraft, naval gunfire, artillery, mortars, machineguns.

At "H" hour the fires of some of the heavy weapons will lift to new targets located deeper within the enemy position. Assault squads cross the line of departure and advance toward the first objective. The advance toward the enemy is closely supported by the fires of light and heavy machineguns and mortars. The squad, using all available cover and concealment, advances toward the enemy position under protection of these fires. During this phase, the squad adopts formations that insure the best control and that offer the greatest degree of protection against enemy fires. When the squad is no longer able to advance without incurring casualties, it advances by fire and movement.

Advancing the Attack

The forward progress of the squad will depend on four things: The correct use of the cover and concealment provided by the ground. The correct application of fire and movement. The effectiveness of supporting fires. The effectiveness of enemy fire.

The squad leader must remember that it is his job to get his squad as close as possible to the enemy with minimum loss. He will be able to do this by taking full advantage of supporting fires, by making use of the best routes of approach, and by utilizing cover and concealment. In order to

take advantage of supporting fires, the squad leader must move his squad as closely as possible behind the barrages laid down by friendly artillery and mortars. The possibility of incurring some casualties from our own fire must be accepted if the effect of the high explosive on the enemy is to be fully exploited. In the past, there have been occasions when our troops have not followed barrages closely or have failed to close immediately with the enemy when the barrages have lifted. The invariable result has been that the enemy has recovered from the shock of the bombardment and has manned his automatic weapons with great effect against our advancing troops.

The squad leader coordinates the fires of his three ARs in close support of his advancing elements. In the absence of instructions from the squad leader, fire team leaders direct the fire of the AR against the enemy positions that offer the most resistance to the advance of the squad. The AR fires single shot unless worthwhile targets for

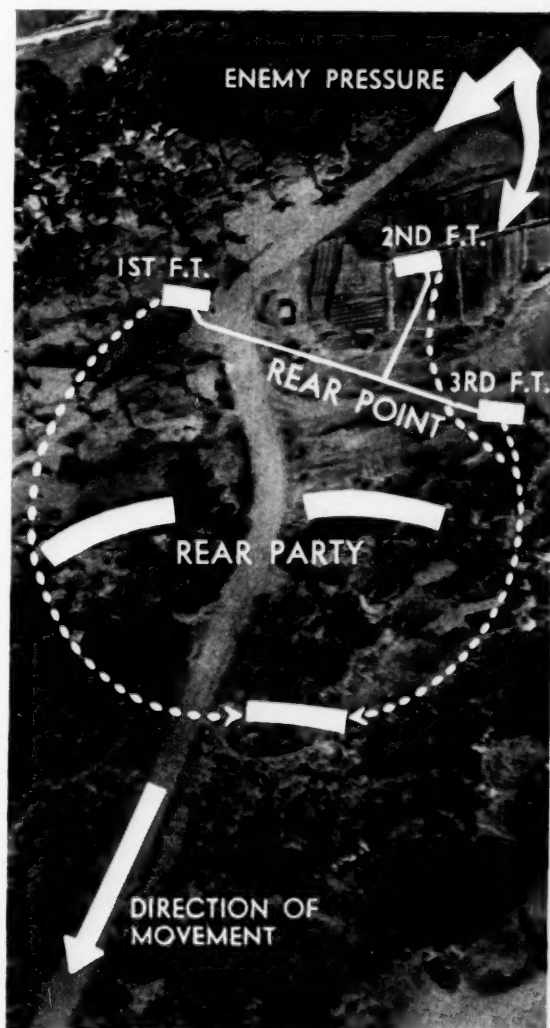


Figure 3. Withdrawal around flanks of unit

This article is based on information in Manual NAVMC-3729, issued by Marine Corps Schools at Quantico, and is presented in this form as a GAZETTE feature.

concentrated automatic fire are presented. Under special circumstances, such as in an attack on an enemy bunker, the squad may use demolitions, the flamethrower, rockets, and antitank, smoke and thermit grenades, to overcome enemy resistance. If tanks support the attack, the rifle squads follow them closely for mutual protection.

The Assault

The assault is delivered on orders, on signal of the platoon commander, or on the initiative of the squad leader. It is delivered at the earliest moment that promises success, and without regard to the progress of adjacent squads. The squad approaches the hostile resistance by keeping as close as practicable to the supporting fires. When these fires are lifted, the squad may employ assault fire to prevent the enemy from manning his positions. In the final stage of the assault, the hostile position is overrun in a single rush with the bayonet. Against an intrenched enemy, the final charge may be preceded by a hand grenade volley.

It is during the assault that leadership in the squad and in the fire teams is the decisive factor. Leaders by their coolness, initiative, and example guide and inspire their men to close with and destroy the enemy.

After the squad has captured one objective, and while it is preparing to continue its advance, it pursues the enemy by fire as long as targets are within effective range. The squad undertakes physical pursuit of the enemy only on orders of the platoon commander.

Reorganization

After the squad has driven the enemy from his position, it will hold what it has won. Enemy counterattacks must be anticipated; Japanese reaction will be immediate and vigorous. The enemy habitually brings down accurate mortar fire on positions from which he has recently been driven.

When the squad drives the enemy from his

position, the squad leader immediately posts a fire team, or part of a team, as security to cover the most likely avenues of approach. He sites the ARs and assigns them fire missions. He places the antitank grenadiers, and orders the squad to dig in. After establishing security and siting his ARs, the squad leader, assisted by the fire team leader, reorganizes his squad as quickly as possible.

He redistributes his men to replace casualties. He maintains the basic triangular organization of three fire teams with one AR per fire team unless the squad strength, including himself, drops below nine. When the strength is less than nine, he reorganizes the squad into two teams, with two ARs in one team and one in the other. He designates new leaders to replace those who have become casualties. He redistributes ammunition and grenades. He moves casualties to covered positions. He informs the platoon commander of the situation, his position, casualties, and ammunition supply. He disarms prisoners, searches them, and sends them, together with all captured papers and documents, to the platoon commander.

After reorganization, the squad must be ready to continue the attack to the next objective on order from the platoon commander. The squad advances the attack to succeeding objectives, using the combat methods described.

Support Squad in the Attack

Before the attack, the squad leader of a squad in support informs his men of the situation, and the proposed action of the platoon. He advances his squad in accordance with the orders or signals of the platoon commander, keeping it under cover as far as practicable, and preventing it from merging with the attacking squads.

When directed to reinforce the attacking squads, he points out the positions of the enemy and of the attacking squads. He indicates the part of the line to be reinforced, and prepares the squad to move forward rapidly. If ordered to attack a definitely located hostile resistance from a flank, the squad leader locates a departure position for the attack and the best covered route of approach thereto. He then moves the squad, preceded when necessary by scouts, to the position selected, and endeavors to overwhelm the enemy by opening surprise fire and delivering the assault from an unexpected direction.

Unwelcome Visitors at the Panama Canal

Leviathans of the ocean occasionally blunder from their wide open spaces into the Panama Canal's outer harbors and docks with results embarrassing both to themselves and the Canal's keepers. One 1,100-pound sawfish that accompanied two destroyers into the Balboa Dry Docks was terrorized and, in turn, terrorized civilian employees with the frantic arcs of its huge saw when the dock was unwatered. A sentry's Springfield finished the sawfish. Whales have run aground three times and died at the Canal, to the annoyance of those in the vicinity.—RALPH Z. KIRKPATRICK.

Corps Artillery of the Army in Combat--2

Coordinating intelligence, and the planning of artillery fires.

By Col. E. M. Edmonson, USA

This is the second article of an authoritative series describing United States Army procedure concerning the organization and operation of Corps Artillery in Combat. Differences with Marine Corps practices, as well as points of similarity, will be noticed.

THROUGH the normal chain of command the corps artillery commander focuses and coordinates the work of intelligence personnel of his own and subordinate artillery units. These agencies must seek continuously for information of the enemy by all available means. Complete information is sought regarding the location, disposition, strength by caliber, composition and general efficiency of enemy artillery; location of artillery targets; enemy dispositions including location of strong points and centers of resistance; movement of enemy artillery and the location of enemy artillery in reserve; antitank guns, roving guns, mortars; and machineguns; landing fields; observation posts and command posts; ammunition dumps and distributing points; routes of advance and assembly points used by the enemy. It is of special importance that such target information be transmitted promptly through artillery channels so that effective conduct of artillery fire results.

Close coordination must be maintained with the corps G-2 who has important sources of information not under the control of the corps artillery commander; namely, intelligence reports from divisions, interrogation of prisoners of war, CIC reports, reconnaissance plans, intelligence reports from adjacent corps and army, radio intercept and many other sources.

Coordination of Air Missions

The use of high performance aircraft for reconnaissance missions and for artillery missions should be coordinated as quite often both types of missions can be executed during one flight and thus effect economy in time and effort.

The Assistant S-2 (liaison officer with the air division) must necessarily spend the greater part of his time at the airdrome. The S-2 should keep him completely conversant with current and projected tactical operations in order that he may intelligently perform his mission of keeping the air corps advised as to the needs of the artillery. A great many enemy batteries and installations are located from air photographs, not only in the

forward areas, but in rear areas. An intelligent study of the terrain, road net, and observation available to the enemy, coupled with a knowledge of the enemy's tactical use of artillery will enable the S-2 to predict with considerable accuracy the area to which the enemy artillery will displace under certain conditions. Such information and conclusions must be transmitted to the Assistant S-2 working with the air corps.

He transmits photo locations of enemy batteries and other enemy installations by radio to the corps artillery fire direction center, which in turn disseminates this information to the artillery with the corps.

When the photographs are received they are given a further study in the artillery echelons which receive them.

This study is focussed by prescribing an xx line, short of which is the responsibility of division artillery while beyond is the responsibility of the corps artillery. Thus each echelon concentrates upon enemy territory within the range and capabilities of its weapons.

Shelling Reports—An intensive educational campaign must be conducted among all units of the corps to insure that they understand the importance of shelling reports and the form in which they should be rendered. Shelling reports are extremely valuable to the corps artillery fire direction center because they indicate first, whether or not enemy artillery is active, and second, which portion of the enemy artillery is active, thus, indicating to the fire direction center the necessity for and the method to be employed in conducting counterbattery. The importance of shelling reports is realized neither by the corps artillery fire direction center nor by the troops until they have been subjected to heavy enemy shelling. All troops must know exactly what shelling reports should consist of and the most rapid means to transmit them to the corps artillery fire direction center.

Each artillery battalion should maintain three shelling report teams consisting of two men each, each higher artillery headquarters should maintain one, and the field artillery observation battalion should maintain four. Teams consist of two men. Equipment includes aiming circle, and when available, a gunner's quadrant.

Artillery battalion or higher headquarters directs teams automatically under the following responsibilities:

a. Direct support battalions for areas actually occupied by infantry.

b. Other artillery battalions and higher artillery headquarters for areas within 1500 yards of their location.

Artillery forward observers, infantry company teams, artillery liaison sections, and other personnel in the forward areas act on mortar reports, using the prismatic compasses when available.

If ricochet or delay craters permit actual measurements with the gunners quadrant the angle or fall is reported in mils. If craters permit estimation only, report angle of fall is low, average, or high. If location of hostile gun can be estimated, report estimated range. Unidentified fragments should be forwarded to the corps artillery fire direction center.

Counterbattery intelligence map—The counterbattery intelligence map is of particular value in arriving at an estimate of enemy capabilities. A simple system of keeping such a map is by using various colors to indicate calibers and multiple overlays to show the current and past enemy artillery situation. The movement and grouping of enemy artillery is often a clear indication of his capabilities, and this taken in conjunction with the G-2 estimate of the situation will often indicate a possible direction and weight of an attack or that he is capable of defending strongly in certain areas. Studies should endeavor to identify enemy artillery with an organization to which it normally belongs, for example, division artillery, corps artillery, armored division artillery, infantry assault guns, and so on. This analysis, coupled with a knowledge of the enemy order of battle, will be of great value to the corps G-2 in verifying or tending to disapprove his estimate of enemy strength, composition and dispositions.

The S-2 situation map—The S-2 situation map differs from a G-2 situation map in that it is not so much concerned with the general enemy dispositions as it is with point and area targets, such as enemy entrenchments, assembly areas, supply routes, observation posts, bivouac areas, reserves, bridges and defiles, etc. This map should be built up and annotated in such a way that it will be of value to the S-3 in developing harassing fires, interdiction fires, and fires to support an attack or a defense. All fire plans should be checked against the S-2 situation map before being finally approved.

Artillery Must Be Responsible for Fire

Pitfalls—One of the pitfalls of the artillery intelligence is the circular message whereby a target is picked up by an observer who can and does bring artillery fire to bear on this target. Parallel intelligence reports through general staff sections often result in a demand from the division or corps headquarters to take this target under fire. The responsibility for delivering fire upon all artillery targets discovered must be left with the artillery, just as the responsibility for the

fire of infantry weapons is left with the infantry. Otherwise, the result will be a duplication of effort and a waste of ammunition.

Location of flash and sound bases—While the technique of setting up flash and sound bases is left to the observation battalion, its efforts should be focussed into those areas deemed most likely to contain enemy artillery, and reconnaissance by the observation battalion should cover those areas into which enemy artillery will probably move. In some cases infantry protection must be given to the advance flash bases set up by the observation battalion, especially when such bases are well to the flanks.

Combined Arms Fire Planning

There are two general methods of planning artillery fires. The normal method, and the one which is always used when time is available, is that which takes place between artillery, infantry, air liaison, and tank officers in the various echelons of command. This is a time consuming method, but it will result in more detailed and accurate fire planning. The other method is utilized when time is not available for such detailed cooperative planning between all echelons of command. In situations where speed is essential in planning the artillery support of an attack, or in keeping an attack rolling, a meeting of all responsible commanders could and should be held and a fire plan developed on one master overlay or acetate. Then each commander concerned, infantry, tank, artillery, etc., could get the information he needed, and get that information to his subordinates. By such staff work in echelon, it would not take long to get to each Arty Bn, forward observer, liaison officer, and subordinate unit commanders, the information they have to have, namely, the scheme of maneuver, the location of concentrations, and the group and series (if any) to which each concentration belongs. It has been demonstrated repeatedly in combat that this latter method is feasible and results in an effective fire plan.

Definitions: Group—A group of fires consists of two or more prearranged concentrations covering a tactical locality which is too large to be covered by a single concentration. The concentrations within the group may be fired consecutively or concurrently, depending upon the number of concentrations, the number of artillery battalions available, and the size of the concentration; that is, whether it is a battery or a battalion concentration. Groups will be indicated by a letter symbol or a combination of letter symbols, when placed on maps or overlays.

Series—A series consists of a number of prearranged fires (groups and/or concentrations), which are planned to support a maneuver phase. Series will be referred to by number for identification when placed on maps, overlays, etc. The

use of series has two purposes: first, to facilitate the operation of fire direction centers by indicating what fires are likely to be delivered during a maneuver phase, and second, to enable prearranged fires to be delivered covering tactical localities too large to be covered by a single group. An example of the latter would be fires to protect an objective, or in a defensive situation, fires to cover in depth and width a large locality under attack.

Schedule—A schedule is a number of prearranged fires (groups, series, or concentrations) fired in a definite sequence according to a time schedule. The time of starting the schedule may be on call. For identification purposes, schedules will be referred to by a code name, such as "Schedule, Cow." Schedules may be fixed in time with relation to H-hour; for example, a preparation. Or they may be fixed with a time relation to the happening of a certain event; for example, a certain schedule may be put into effect at S time. S time to be announced when appropriate.

Tactical Considerations. The following principles will assist in planning artillery fires:

The Offensive. The artillery supports the at-

tack throughout the depth and width of the hostile position by:

- Neutralizing the enemy's artillery.
- Destroying hostile command posts, communications, OPs, and fire direction centers.
- Blocking the movement of reserves.
- Disrupting hostile mechanized forces.
- Concentrating its fire on objects of decisive importance at the critical moments of the attack.
- Delivering close supporting fires in accordance with the requests of the supporting units.
- Protecting the supporting units during their reorganization on objectives.
- Breaking up counterattacks.

The Defensive. The artillery supports the defense throughout the width and depth of the defensive sector by:

- Delaying and disorganizing the enemy in his approach to the position by long range harassing and interdiction fire.
- Disrupting the enemy's preparation for attack by counter-preparation fires.

Time Min- utes	Material	2 Volley Conc.					3 Volley Conc.					5 Volley Conc.				
		Min per Conc	No. Conc	Rds per gun Exp	Rate of fire per Min	Max rate fire per Min	Min per Conc	No. Conc	Rds per gun Exp	Rate of fire per Min	Max rate fire per Min	Min per Conc	No. Conc	Rds per gun Exp	Rate of fire per Min	Max rate fire per Min
10	105 How M2	1.5	7	14	1.4	4	2	5	15	1.5	4	2.5	4	20	2	4
	155 How M1	2	5	10	1	2	2.5	4	12	1.2	2	3	3	15	1.5	2
	155 Gun M1	2	5	10	1	1	3	3	9	.9	1	5	2	10	1	1
	8" How M1	2.5	4	8	.8	1	3.5	3	9	.9	1	5	2	10	1	1
15	105 How M2	1.5	10	20	1.33	4	2	7	21	1.4	4	2.5	6	30	2	4
	155 How M1	2	8	16	1.07	2	2.5	6	18	1.2	2	3	5	25	1.7	2
	155 Gun M1	2	7	14	.93	1	3	5	15	1	1	5	3	15	1	1
	8" How M1	3	5	10	.67	1	4	4	12	.8	1	5	3	15	1	1
20	105 How M2	1.5	13	26	1.3	4	2	10	30	1.5	4	2.5	8	40	2	4
	155 How M1	2	10	20	1	2	2.5	8	24	1.2	2	3	6	30	1.5	2
	155 Gun M1	2	10	20	1	1	3	6	18	.9	1	5	4	20	1	1
	8" How M1	3	7	14	.7	1	3.5	6	18	.9	1	5	4	20	1	1

Note: 1. Condition of material and training of gun crews assumed to be normal.
2. Average deflection shift between concentrations 30 mils-average range change between concentrations 1,000 yds.

Capabilities of artillery battalions in number of concentrations that can be fired in a certain time are outlined above and must be considered in planning concentrations.

- c. Blocking his attack with fire in width and depth throughout the defensive sector.
- d. Breaking up the assault on the battle position by close-in defensive fires.
- e. Limiting penetration of the battle position by fires within our own lines.
- f. Supporting a counterattack.

Groups and series should be planned to facilitate the maneuver of fire on the ground, and to meet developments of combat. The fire plan usually starts by planning appropriate sized concentrations on known and suspected enemy localities. These concentrations are first placed into groups and/or series, at the Arty Bn and Inf regimental level. These groups or series may fall entirely in the zone of an attacking battalion; may overlap boundaries between battalions, or may be placed beyond an objective. This permits forward observers and infantry battalions to call for those groups or series which are wholly within their boundaries, and the artillery battalion commander, or infantry regimental commander, to call for those groups or series within the regimental boundaries and those overlapping battalion boundaries. Likewise, upon the Div Arty level, groups and series may be arranged to overlap regimental boundaries and to protect division objectives.

Study of Organization for Combat Necessary

Specific battalions are assigned a specific concentration, or concentrations, within each group in order that each battalion will not have to prepare data for all concentrations. This demands a careful consideration of the organization for combat. No particular difficulty is encountered within the direct support battalion or the direct support group, as it usually fires within a regimental sector, particularly in an attack situation. However, when Corps reinforcing artillery is present, the direct support battalion, or direct support group, must know specifically which reinforcing battalions are to be integrated in its prearranged fire plan. The siting of these reinforcing battalions influences this also, as corps reinforcing battalions usually have a general support mission, and are sited by the commander concerned to perform their general support mission. To express the matter differently, when a group of headquarters is told to reinforce the fires of a division with one or more battalions, the group or headquarters commander must designate a specific battalion, or battalions, to do the job in order that proper communication, liaison, and observation may be set up, and in order that their fires may be integrated into the prearranged fire plan of the division artillery. Groups and series should be planned in such a way that, if one or more of the reinforcing battalions are on a division or corps mission at the time the group or series is called for, the fire plan will not be disrupted. This can be accomplished by having the direct support artil-

lery prepared to take over their missions, or by superimposing the fire of the reinforcing battalions upon the direct support fire plan.

The number of prearranged concentrations, groups or series incorporated in any fire plan varies with:

- a. Scheme of maneuver. b. Target information.
- c. The amount of artillery available. d. Our knowledge of the terrain, enemy tactics, and many other factors.

Figuring the Number of Concentrations

A yardstick might be the number of concentrations the artillery available could fire in the estimated time of the action. If this number of concentrations did not adequately cover all known enemy targets and suspected localities, more concentrations should be planned in order that a choice might be made to meet the developments of combat. Capabilities of artillery battalions are set forth in the diagram on page 47.

The Preparation. In general, a preparation should be long enough to accomplish the effect sought, but not so long as to permit the enemy to change his major tactical dispositions in time to meet the attack.

The length of a preparation is not, therefore, determined from purely mechanical factors. A tactical approach must also be made. That is why the highest commander determines whether or not a preparation will be fired, and its duration. It is, like all other military operations, a question of judgment, based upon an estimate of the situation. Some of the factors which influence the preparation are:

- a. Ammunition available. b. Time of attack.
- c. Target information. d. Range limitations e. Air corps participation. f. Whether or not the commander desires to secure tactical surprise.

The Counterpreparation. A general counterpreparation is, likewise, fired only upon the order of the highest commander present, as it requires a great amount of ammunition expenditure and is likely to give away our dispositions. A general counterpreparation, except for the counterbattery phase, may be localized on any particular front. That is to say, if a major attack is anticipated on the front of one division, all of the artillery with the corps within range of this locality should be set up by means of a prearranged fire plan to take care of this particular situation.

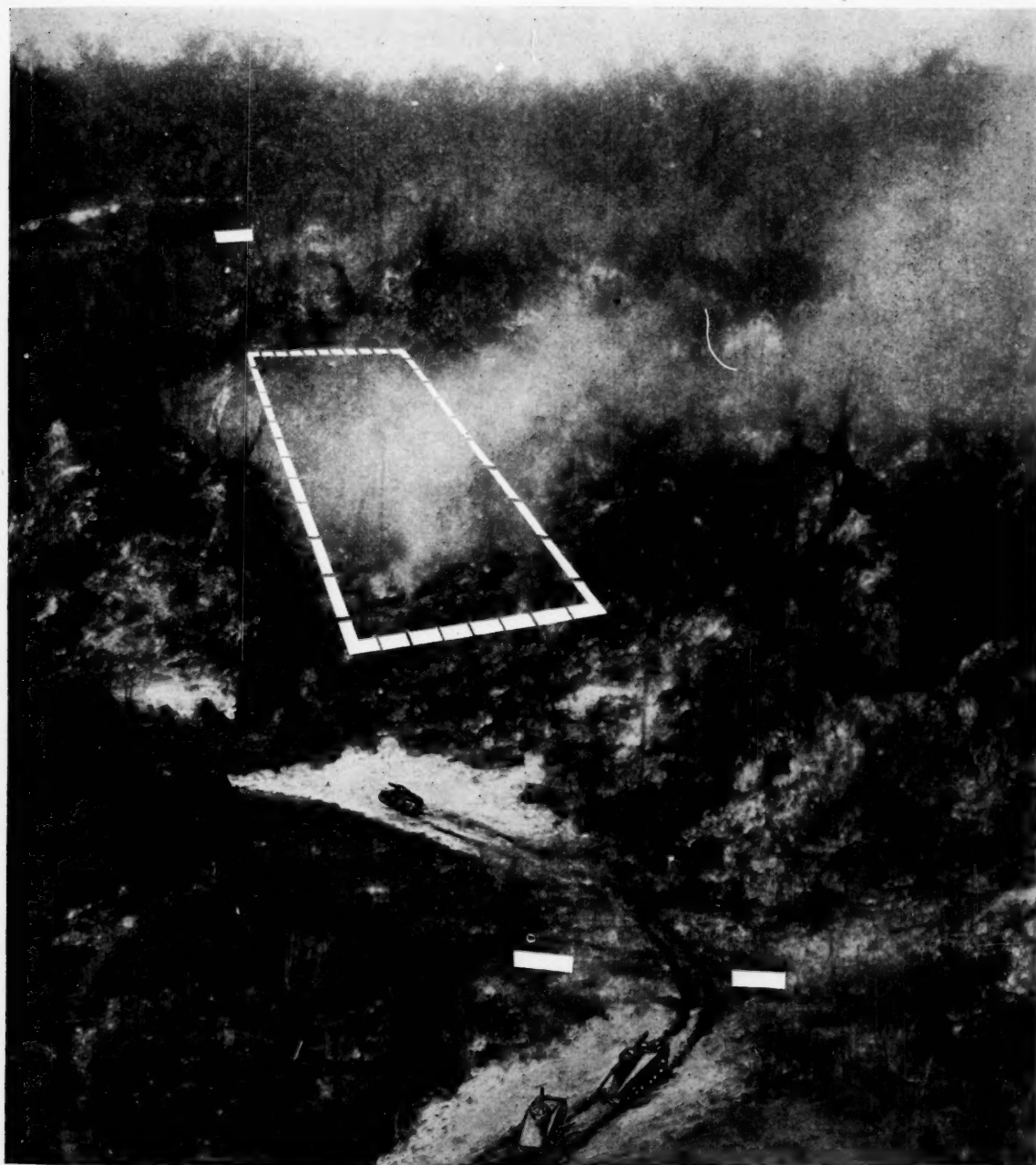
The fundamental principles are that, when we are attacking, our artillery fire plan corresponds to our own scheme of maneuver. But, when we are defending, our defensive fire plan must correspond to whatever scheme of maneuver the enemy undertakes. Regardless of whether we are attacking or defending, the organization for combat, missions, zones of fire, liaison, communication, and observation, must be definitely set up and understood by all concerned.

Marked for Annihilation by Air

Effective use of close air support is shown in the photograph below, an aerial view of Peleliu's Bloody Nose Ridge. Within the area shown by the broken lines, Japs had dug themselves into caves. Although surrounded, the enemy was able to fight off all attempts at dislodgment.

The advance tank moved into the area but was disabled and had to withdraw to where it is shown. The two tanks behind it moved forward

to provide cover while the markers shown in the foreground were placed in position. In the background, close to Sniper's Road which appears at the left, another marker was placed. These three markers, together with a smoke signal to the rear of the two tanks, clearly indicated the target area. Intensive bombing by the Corsairs was carried on until the pockets of resistance became too small to justify further aerial activity.



Tanks and area in which they are operating have been retouched in this photograph.

Amphibious Reconnaissance In a cam-

paign involving amphibious warfare, vital information can be gained by reconnoitering hostile shores. This article describes this work and its development. By 1st Lt. Leo B. Shinn

ONE quiet, dark night in February, 1940, a submarine surfaced cautiously a few hundred yards off the coast of Vieques, a small American owned island near Puerto Rico. A party of four Marines hastily and quietly debarked in a small rubber boat and proceeded toward the shore. The party consisted of a battalion intelligence officer and three enlisted scouts from his section. Their mission—to go ashore and make a secret reconnaissance to determine the location and nature of “enemy” beach defenses, obstacles, routes inland from the beach, and other related information.

The occasion was the annual Fleet Marine Force maneuvers in the West Indies, and in this situation the Second Battalion, Fifth Marines, was preparing to land on Vieques Island which was defended by the First Battalion of that regiment. The patrol accomplished its mission successfully and returned to the submarine.

That incident obviously was not the first amphibious reconnaissance and is not cited here as such. It is mentioned here as proof that the Marine Corps prior to the war was giving serious thought to the practicability of landing small reconnaissance patrols on hostile shores, and that the development of amphibious reconnaissance was paralleling the development of other phases of amphibious warfare.

Since the above incident, Marine reconnaissance patrols have made many successful landings on actual enemy shores and amphibious reconnaissance has contributed considerably to the success of our landing operations in the present war.

First Amphibious Reconnaissance Unit

In January, 1942, the initial step was taken toward the development of personnel specialized in the mission of reconnoitering hostile shores. A small group of Marines was selected from the various regimental and battalion intelligence sections of the First Marine Division and was assembled at Quantico by the Commanding General, Amphibious Corps, Atlantic Fleet. The group, consisting of two officers and about twenty enlisted Marines, became known as the “Observer Group.” It was an integral part of the Corps G-2 section and is believed to have been the first unit in the Marine Corps to be organized and trained specifically for amphibious reconnaissance. This small group conducted extensive research toward the development and improvement of amphibious reconnaissance techniques and the results of its

experiments remain the principal basis for current amphibious reconnaissance doctrine.

The theory of amphibious reconnaissance was built around the idea of transporting small patrols to the objective by submarine, landing them during darkness, and picking them up after the reconnaissance was completed, an idea which is far less simple than it might seem. It was obvious from the beginning that there were many difficult and unusual problems to be solved. For ship-to-shore movement, it was necessary to have light, portable landing craft which could be loaded through the small hatch of a submarine and which could subsequently be assembled and launched under adverse conditions. Navigation of small craft in darkness, in enemy waters where little is known about tides, currents and other hydrographic conditions, and without the usual navigation instruments was and remains a difficult problem.

Rigid Security Measures Essential

Once ashore, there arose among other difficulties, that of communication with the transporting vessel. Then there was the omnipresent necessity for rigid security measures—another series of problems in itself. Landing would have to be made in darkness at points along the coast where the enemy would least suspect landings, the landing craft would have to be concealed while the patrol was ashore, tracks could not be left on the beach, and almost any method of shore-to-ship communication would be in constant danger of detection by the enemy.

The observer group set out to solve the problems mentioned above, and a multitude of others. To that end, it experimented with many types of small landing craft (rubber boats, folding canvas boats, kayaks, etc.), outboard motors, light-weight radio equipment, signal lights, clothing, and various types of special equipment.

While the Observer Group was experimenting along the technical lines of amphibious reconnaissance, the Corps G-2 Section was engaged in the evolution of a tactical doctrine for the employment of amphibious reconnaissance patrols. Since the capabilities and limitations of amphibious reconnaissance had not at that time been determined by actual combat experience, it was difficult to prescribe specifically what missions would and would not come within the scope of amphibious reconnaissance. It was tentatively decided that patrols, properly trained, could accomplish a

variety of intelligence missions. These ranged from a hydrographic reconnaissance of the sea floor near the shoreline to an inland reconnaissance to determine practicability of the terrain for air landings. Incidental missions of a non-intelligence nature could include diversions, minor night raids, and disruption of enemy communications. Experiments and research by both the Observer Group and the G-2 Section were continued until the group was transferred, in September, 1942, to the Amphibious Corps, Pacific Fleet.

Anticipating the need in future operations for certain types of information which could be obtained from no other source, the Commanding General, Amphibious Corps, Pacific Fleet, expanded the Observer Group, and in January, 1943, activated the first Amphibious Reconnaissance Company. This company was small and rather unique in its organization. It consisted of a headquarters platoon and four reconnaissance platoons. Each reconnaissance platoon consisted of one officer and nineteen men and was broken up into a platoon headquarters and two six-man reconnaissance squads. This organization permitted one reconnaissance platoon, with equipment, to embark in two ten-man (or three seven-man) rubber boats. Furthermore, six men was considered to be the most suitably sized unit, consistent with secrecy and rapidity of movement ashore, to be employed as a single patrol.

This company trained in the United States for approximately nine months. During this period, it continued to search for new methods and techniques, and to perfect those already adopted as standard operating procedure. In March, 1943, a training film entitled "Amphibious Reconnaissance Patrol" was made by personnel of the company. Also during this period, it assisted in the training of two Army units for amphibious reconnaissance missions. One of the Army units was cited for its performance in the campaigns of Attu and Kwajalein. The other was employed in the landing at Kiska. A close liaison was and still is maintained with these units whenever possible, and the training of professional experience proves valuable to all concerned.

Operations in Rapid Succession

The Amphibious Reconnaissance Company, ACPF, departed from the United States in September, 1943, to participate in the campaign of the Central Pacific.

After taking part in several operations which occurred in rather rapid succession, it was ap-

parent that one company of this type encountered difficulty in preparing itself for the next operation. Casualties among personnel and equipment occurred in combat and through normal attrition. Also, time was required to train replacements and to absorb lessons learned in recent combat. After careful study, the Marine Corps decided to organize an amphibious reconnaissance battalion. The tables of organization provided for a headquarters company and two reconnaissance companies. The organization of each reconnaissance company was similar to that of the original Amphibious Reconnaissance Company, but was augmented by a weapons platoon of one officer and nineteen men trained in the use of mortars, light machineguns and other special weapons. The two-company strength permitted the employment of a leap-frogging assignment of missions from one operation to the next; while one company was in combat, the other could train and make other preparations for the next operation. Furthermore, as the Central Pacific campaign progressed westward, land masses increased in size, and amphibious reconnaissance missions too large to be accomplished by a single company were in view.

The general function of amphibious reconnaissance needs little discussion. Much intelligence information can be gained from aerial photos and other intelligence sources. There are certain types of information, however, which cannot be determined by any method other than by an actual physical reconnaissance. Depths of water just off beaches where landings are contemplated, nature of surf, reefs and other hydrographic conditions, negotiability of vegetation, covered terrain for vehicles, presence of mines and other concealed obstacles—these are some examples.

In addition to positive information of the nature described above, important negative information is often secured which promotes economy of force and of materiel. In one instance, an amphibious reconnaissance patrol discovered that a certain atoll was undefended (all previous indications were that the atoll was defended), and the destruction of valuable buildings and materiel ashore by naval gunfire was avoided. Also, the battalion landing team for this particular atoll was kept combat-loaded for employment in a subsequent operation.

As the war progresses, the nature of amphibious reconnaissance constantly changes. It still plays a vital role, however, and will continue to do so as long as there remains a campaign involving amphibious warfare.

Privation on Pennsylvania Avenue

Before the Japs were kicked off Guam, they told the natives that things were so tough in the United States that President Roosevelt had to stand in line for his rice ration.—*Quantico Sentry*.

What's New

Trends of Military Interest.
By T/Sgt. Ray Moulden

The enormously important Iwo Jima operation has disclosed much new equipment and material, including:

HALF-TON, JET PROPELLED ROCKET MORTARS employed by the Japanese for the first time in their desperate attempts to stem the Marine drive to secure the heavily fortified island. The shell is described by Marine gunnery experts as having a nose fuse and a rocket motor. It is probably launched from platforms, by jet propulsion, carried through the air by rocket power and then detonated at destination by nose fuse. The enemy also used conventional rockets, dual purpose antiaircraft weapons and mortars.

PILLBOXES OF FOUR-FEET CONCRETE also were used by the Japs, and many steel-reinforced emplacements and foxholes were uncovered as well. The sand-covered pillboxes required several direct hits by our rockets to blast away the loose protection before effective hits on the concrete could be assured.

DURING PREINVASION RAIDS, Marine aviators used an enormous new camera to record damage and terrain features and so powerful was the flash from the equipment that it could be seen for 50 miles and served to blind enemy antiaircraft gunners long enough for our low flying night attacking planes to escape. The flash had 500,000,000 candlepower and lasted a fifth of a second. The preinvasion squadron of Marine PBJs (Mitchell Medium bombers) smashed at Iwo for 74 nights and was armed prin-

cipally with rockets rather than bombs, to allow transport of more gasoline and hence greater range. The blinding feature of the flash bomb was an "extra dividend" not anticipated by the Marine units.

CURTISS-WRIGHT'S NEW HELL-DIVER, SB2C-4, participated in the carrier based air strikes on Tokyo in conjunction with the Iwo invasion with one of the greatest loads of explosives ever carried by a single-engined aircraft. The Navy and Curtiss-Wright disclosed that more than 2000 pounds of bombs were carried by the plane, and in addition, 20-mm cannon are mounted in each wing, plus eight five-inch rockets also in wing mounts. Belly-carriers hold 1000 pounds of bombs—wing racks another 1000. Called the best in the Navy, the plane dives more accurately since installation of "swiss cheese" perforated driving brakes. It also has a more powerful engine than previous models and a four-bladed electric propeller instead of the original three-blade design. The dive-bomber is reported to have much improved performance and maneuverability.

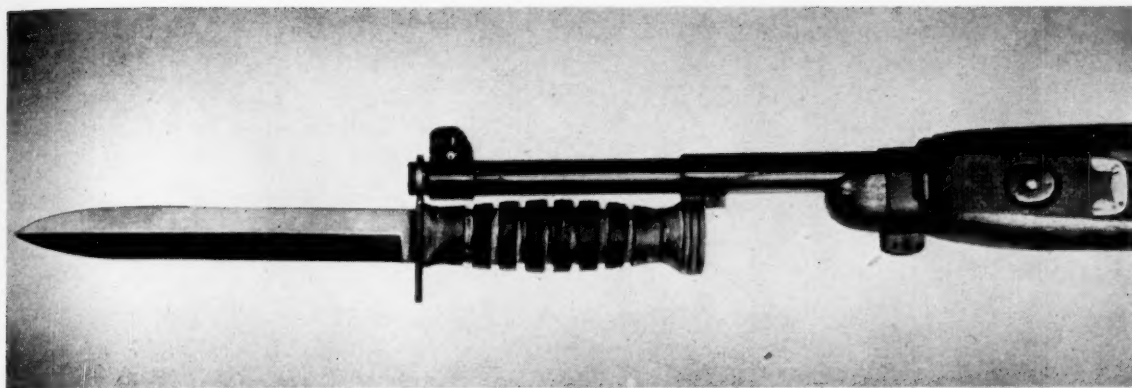
THE NAVY TOOK ITS OWN SUPPLY BASE along on the Iwo operation, and for the first time many of the logistical problems of over-long supply lines were solved. Fleet Admiral Chester Nimitz calls the floating supply bases carried to Iwo and on the Tokyo carrier strikes the "secret weapon that upset Jap strategy". All naval installations, from drydocks to quonset



This British 95-mm tank howitzer effectively launches both smoke and high explosive shells.



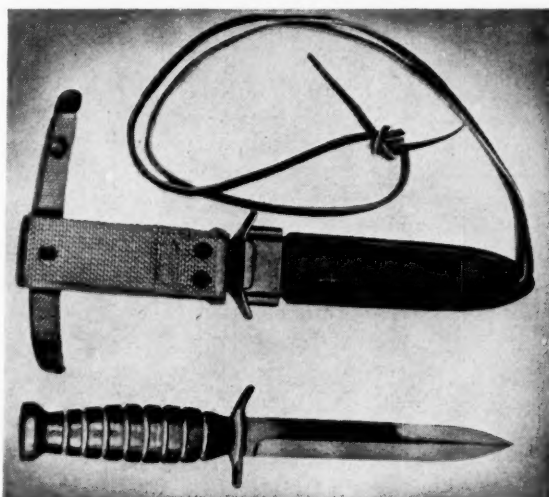
Sea water pumped at high pressure is used by the British Army to explode beach mines.



The M-1 carbine now has a bayonet for the first time in its history. The weapon, which can double as trench or jungle knife, is shown fitted on the carbine's barrel.

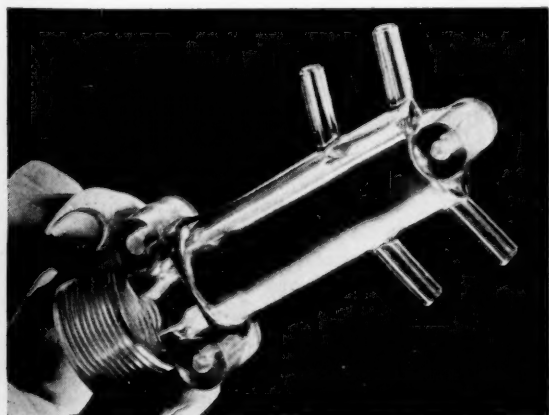
huts, are floated right along with the fleet. Squadron 10 of the Pacific fleet operates this huge floating base, which includes floating cranes, hotels, repair units, bakeries, offices, refrigerated warehouses, wells, drydocks, repair ships. More than 12,000 workers are carried also to man the installations, and the 400 pieces of floating equipment included in the unit range from electrical equipment repair ships, tugboats, three fresh water tankers, an evaporation vessel capable of making fresh water from salt, to a ship which does nothing but bake bread for the invasion forces. For the Iwo operation, these vessels carried enough food to feed Columbus, O., with a population of 306,087, for 30 days; enough spare clothing for 1,500,000 persons, and enough candy, shaving cream, tooth paste, and miscellaneous items to stock 6000 drug stores. In addition, the force carried 100,000,000 cigarettes.

WHOLE BLOOD was used at Iwo Jima by Navy units operating from special craft which sailed with the invading task force. Taken from O-type donors at Red Cross centers on the west coast, the whole blood was refrigerated and shipped to Guam by plane. The movement was



The plastic scabbard lies beside the M-1 carbine's bayonet-trench knife combination.

timed perfectly so that there would be just 21 days from time of donation to date of invasion, since whole blood becomes usable exactly after 21 days. It remains usable for only 60 hours after that in a temperate climate. This was the first time specially designed carrying craft for the blood were used in any operation, though whole blood was used originally in the Normandy invasion and some was used at Leyte. Containers sent ashore at Iwo carried 16 pints each and each refrigerator shipment held 2000 bottles, maintained at 40 to 45 degrees with ice. Similar service is now planned for all future Pacific operations. The whole blood is used in addition to plasma. The latter is not effective when the patient has lost large quantities of blood and requires whole cell replenishment quickly. Since enemy action at Iwo was such that it required whole blood in unusual quantities, the new equipment was particularly beneficial in saving lives.



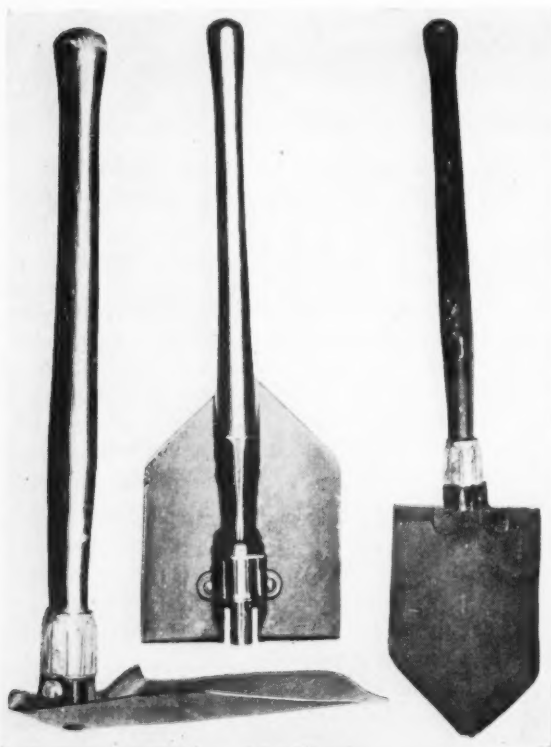
Water is removed from aviation fuel by use of this plastic alternate static vent drain.



Three parts of the mask providing protection for B-17 crews flying over Germany are shown. Air crews can work in temperatures of 67 degrees below in this outfit.

AN AIR POSITION INDICATOR, developed by Bendix Aviation Corporation, hitherto a secret device of the B-29 super-bombers, has been disclosed as constantly pinpointing the position of planes on the map and is greatly assisting in guiding U. S. planes to Pacific target areas. It registers throughout the flight distance traveled, direction of the plane, and longitude and latitude at any given moment.

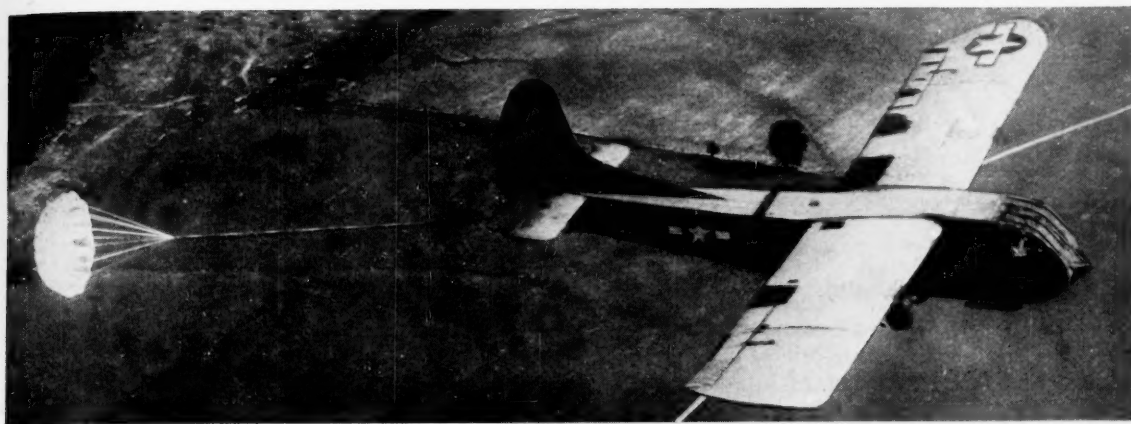
AIR TRAFFIC CONTROL CEN-



A new field shovel is shown at left and right as pick and shovel; in center, for carrying.

TERS, following the wake of advancing military, have been set up throughout the Pacific, aiding navigation virtually to the door of Japan and Siberia. The Civil Aeronautics Administration operates these centers with civilian personnel in cooperation with Oceanic Air Traffic Control, which serves both Army and Navy traffic. It is similar to controls previously installed in the Atlantic to expedite delivery of planes and supplies in the European theatre. More than 200 radio directive and homing ranges have been set up outside the United States for the guidance of airmen, laying the groundwork for possible universal adoption of the American system of air traffic control. Radio range stations serve as directive lighthouses from Alaska to Siberia, in addition to routing aircraft over the vast southern Pacific areas. Disclosed newer stations are at Johnston Island, Guam, and Kwajalein.

SPEEDS OF MORE THAN 400 miles an hour are claimed for two new Japanese planes, seven other types will do better than 350, and two photo-reconnaissance ships are capable of 375 and 395 mph, according to the annual listing of combat planes by Aviation Magazine. The new directory states these planes are still without armor protection for crews or self-sealing gasoline tanks, and cannot compete in speed with the B-29 at the superfortress' ideal level of 40,000 feet. However, they are of sound construction and high performance and will be far from easy to outmaneuver, the magazine contends. The two fastest fighters are an Army craft, Frank I, with a 2000-hp radial engine and range of 1700 miles, and a short, Navy fighter, Jack II, with wingspan of 35 feet, five inches; two twin-row engines of 1870-hp each and range of 1100 miles. Improved muzzle velocity is claimed for 7.7-mm guns and 20-mm cannon than for similar armament on the old Zeke and Hamp fighters. The Japs have also turned out a plane



A CG-4A glider successfully tests an "air brake," which is a 10-foot nylon drag parachute, designed to lessen the danger of gliders cracking up when they land.

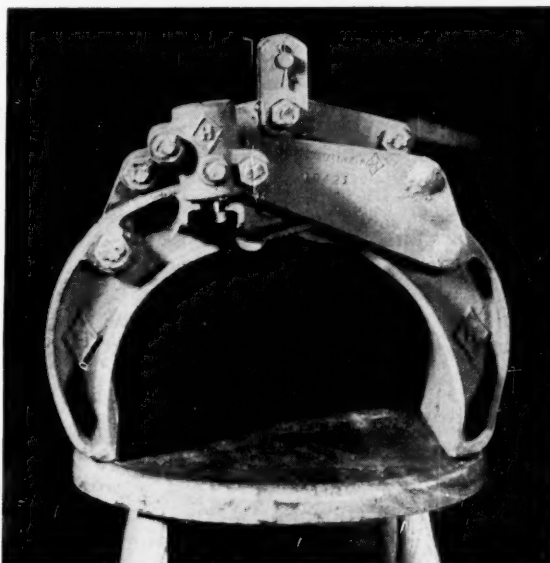
to compete with the Thunderbolt, a Tojo II, first able to dive with the P-47 without losing its wings. Aviation claims the craft is vulnerable, however, with inferior armament. Dinah III and Myrt II are two fast reconnaissance planes, the latter with a good water-injection engine. Among 56 other types listed for the Japanese is the first four-engined combat plane credited to the Nipponese, a heavily armed but apparently slow Navy transport bomber known as "Liz".

QUADRUPLE, 8000-FOOT LANDING STRIPS constantly being enlarged, make Tinian island the largest airport in the world, according to Wright Aeronautical Corporation officials returned from Pacific tours. Built within 60 days, the huge strips are 300 and 400 feet wide, with ample room for warming up big planes.

NEW TWIN JET PLANES are being operated by the Germans on the Western front, according to the U. S. Ninth Air Force, which announced the partial demolition of a plant producing power units for the craft. The plane was said to be similar to the Messerschmitt 262 which has been used by the Luftwaffe in increasing numbers.

PRODUCTION OF ROCKET POWDER by the Hercules Powder Company was increased 400 per cent last year and will be substantially boosted above current levels this year. No American plant made the powder before 1942, and so urgent was the need for original production that the explosive was sent to the fronts by air. Rocket powder sticks are often five feet long, and contain 50 per cent more nitroglycerin than other powders.

DEVELOPMENT OF A FIRE-RESISTANT PLASTIC, which is also shock-proof and easily molded, has been announced by General Electric Company. The product is for Navy use. Asbestos fibres are bound together with phenolic resins to make various degrees of shock-



This steel tong ammunition handler is designed to hasten shell from dump to the guns.

resistant plastic. Glass for panels on ships is another plastic development, the high-pressure material being created from layers of glass cloth bonded together with melamine resin.

The following list shows the source from which each picture in this issue was secured. All pictures not credited are either official Marine Corps or Navy photos.

Page

13 U. S. Army Air Forces	(bottom) Eastman Kodak Co.
31 1st Lt. Robertson H. Galvin, USMC	54 (top) U. S. Army Air Forces (bottom)
33, 34, 35 W. H. B. Smith	U. S. Army
52 British Official Photos	55 (top) Air Technical Service Command (bottom) Heppinstall Co.
53 (top) U. S. Army	

Books

Recent Offerings for Military Readers. Books
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Battle for a Beachhead

Had *Betio Beachhead** come out at a time closer to the conflict it describes, it might well have helped its readers toward a more thorough understanding of what takes place prior to and during an amphibious landing against beaches well defended by a fanatical enemy.

In the decades to come, when historians become curious to tell the complete story of the battle for Betio, this book will contribute its part along with the scores of others which will be dragged from dusty corners, each to provide contributing bits of information.

Almost invariably in the battle tales we read, when an author attempts to allot credit to particular battalions, those battalions completing the defeat of the enemy come in for far more than their share of glory. This book is no exception in this respect. For example, of all the infantry battalions landed on Betio, the ones which did not land against enemy opposition have received the greatest number of words describing their action. Of course, there are good reasons for this. Of those who came just to see, fewer people are looking when the going is toughest. And in the early hours, those that came to fight are fighting, and so only know about an extremely small part of their own battalion's zone of action. Too, there is generally a greater number of those with a "recording for posterity" urge travelling with the reserve elements of a landing force.

Doubtless, the author has had access to at least some of the official records and, by reason of this, the book has a rather authentic odor. In fact, it smells much better than some stories on the same subject which are now circulating.

Among the Marine and Naval personnel who read this book, there will perhaps be many who could pose some tough questions for the author to answer. Notwithstanding these probabilities, the true spirit of the Marines as they approached and engaged in this battle emanates from this account of the battle for Betio.

To me, this book seems to sum up that spirit in the feeling one gets that every Marine knew that with both God and the U. S. Navy in direct support of the Second Marine Division, there

* *Betio Beachhead* by Captain Earl J. Wilson and Marine Combat Correspondents MT/Sgts. Jim G. Lucas and Samuel Shaffer, and S/Sgt. C. Peter Zurlinden. (G. P. Putman's Sons, \$2.50)

Colonel David M. Shoup, who reviewed *Betio Beachhead*, was awarded the Navy Cross for extraordinary heroism during the initial landing on Betio Island, on November 20, 1943. The citation accompanying the award states in part: "When his troops temporarily hesitated in the face of withering fire from enemy shore emplacements, Colonel Shoup, realizing the urgent need for reinforcing our thinly held lines, courageously placed himself in an advanced position and, by his valiant disregard for his own personal safety, inspired the men of his command to charge the heavily fortified beach and secure an advantageous position for further attacks."

could never be any doubt that Betio would be taken. However, they all knew there would be considerable haggling over the exact price which was to be paid for this bit of coral sand.

Some of the methods of barter are well described in *Betio Beachhead*.—D. M. S.

Three Decades of Aerial Combat

A pictorial history of combat aviation is presented in *Fighting Wings**, which covers the 30-year period from 1914 to 1944. Since aerial warfare is such a recent development, the authors have had available an abundance of source material, and this they have used well. Their compilation of more than 250 photographs and accompanying text tells a graphic story of the phenomenal growth of combat in the air.

Contrasting the mammoth bombers of the present war with the flimsy flying machines of World War I, it is hard to realize that only three decades have passed since those early Taubes, Spads, and Breguets flew in combat. It is even more difficult to picture what another 30 years will bring forth, though significantly the book ends with a discussion of robot bombs and jet propelled planes.

The book contains an interesting reminder of this country's tendency to fall behind in utilizing technological developments:

"Between 1908 and 1916, fifty-nine planes in

* *Fighting Wings*, by Gilbert Paust and Milton Lancelot. (Duell, Sloan and Pearce, 256 p., \$2.75.)

(Continued on page 72)



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NAME & ADDRESS

Attack on Guam

(Continued from page 5)

a cluster of low hills. It was late afternoon when the final coconut bunker was neutralized by tanks and riflemen. They went on to a broad rice paddie. The soggy ground was too soft for tanks to cross; the foot soldiers went on through hip-high grass. Machinegun fire enfiladed the field; mortar shell fragments sliced the grass like a sickle. The Marines bent low and advanced in spurts through the coarse weeds. Men who stood up to get a direction bearing were hit. Two tanks were disabled before they withdrew. Troops in the center were exposed to enemy fire in a sparse clearing. They fell back at dusk to the hills. Troops on the right flank crossed the paddie, hidden by weeds. With troops on the left they formed a line 800 yards to the north. Before them spread another rice paddie and it also was swept by mortar and automatic fire. The Marines retired to a line of hills 400 yards back.

The enemy launched a sloppy counterattack during the night. Discouraged by our infantry and artillery fire, it dissolved an hour after it began. At 0900 of July 24, units of the 22nd Marines advanced in depth on a narrow front to outflank Jap strong points covering the southern approaches to the rice paddie. A heavy preparation by aircraft, artillery and naval gunfire preceded the flanking movement.

The Marines started slowly up the Agat-Sumay Road. The avenue of approach was mined with aerial bombs, bracketed by enemy mortar and artillery fire. Tank guns blasted resistance from concrete pillboxes and coconut log barricades. The attacking force swung west, sweeping the blunt hills that overlooked the rice fields. They demolished the caves with explosives. Five enemy tanks rumbled into the fight. In a matter of minutes the Japanese armored thrust was broken by our mediums. Marines overran the rice paddie. The main body reached the base of Orote Peninsula by nightfall.

Preparation for the assault on Orote began. Despite the fatigue of the Brigade's troops after four days of continuous fighting, despite their need for reorganization, they prepared for immediate combat. A unit of the 4th Marines pressed on after dark to fill a final gap in the lines, to clamp tight on the enemy's last avenue of escape. The perimeter of defense was consolidated. Infiltrating reconnaissance teams failed to determine Marine positions.

Making Each Shot Count

The Japs milled around in the night. When all other attempts to draw wholesale fire failed, they screamed, "Help!" in English. American

troops refused to disclose their positions. Excellent fire discipline was observed all along the line. Marines remained unmoved by the harassing flurries of Nippon lead. "We didn't shoot unless we were sure of results," said Captain Archie B. Norford, "Every time we squeezed a trigger we snuffed out a Nip."

The 22nd Marines resumed the attack at 0830, July 25. They hammered at the foot of Orote Peninsula where Japanese foot troops fought with the rashness but without the relish that had marked their resistance earlier. They were tired, too.

The enemy depended on pillboxes to delay the American thrust; they depended on tanks to drive it back. The emplacements were well camouflaged in the tangled vegetation. Many machinegun nests supported the concrete strong points. Eight Jap tanks counterattacked but they were held at bay by Marine bazookas until General Sherman's repelled them. The Marines had no cover, little concealment. Their zone of advance was paved with coral subsoil; entrenching tools could not penetrate it. Casualties were heavy during the morning. A battalion was depleted but its replacements stormed the Jap fortifications and gutted them with flamethrowers and grenade fragmentation. By 1600 the area between Apra Harbor and Agat Bay was secured and the intervening ground mopped up.

Japs in a Death Trap

The jaw of the pincers was closing. Unless the Japs broke through the trap, their main body was hermetically sealed in death on Orote.

At 1700 enemy barges attempted a sneak through Apra Harbor from the vicinity of Sumay. The formation was scattered by aviation and artillery. The exit by sea was emphatically slammed shut. The Japs were hoist on the horns of a terrible dilemma: annihilation on the peninsula, or a suicidal banzai charge whetted by the blood of Marines. They chose the latter. At nightfall they prepared for a gory rendezvous with their ancestors.

Marines were crammed along the narrow neck of the peninsula. They lacked room to maneuver; they were vulnerable to a mass attack. To the left front a thickly wooded mangrove swamp sheltered a concentration of Japs. The Americans heard their brittle shrieks as they stimulated themselves with sake for the ordeal. It was imperative to smother the impending attack with an artillery registration on the rim of the swamp. But all Marine communications were dead. Telephone wires were cut and radio frequencies were jammed with Jap talk. At 1900 a crew of wiremen led by

Marine Gunner Nick Schevchenko, crawled through the thorny underbrush to mend severed connections. They followed telephone lines with their fingers in the darkness. Like a magnet, the slightest sound attracted tracer fire from Japs and from Marines. They worked cautiously, yet they worked against time. Unless the broken wires were repaired the banzai charge would overwhelm American units isolated from each other by barriers of silence.

Captain Philip P. Santon at the fire direction center began trying to contact the front for an artillery bearing at 2000. He spoke for an hour but the jargon of the Jap interceptors shrouded his words in unintelligible obscurity.

Captain Santon got an idea. He switched from English to German. The jamming stopped. The enemy was listening, attempting to break this new, diabolical "code." While enemy intelligence was busy in silent thought, Santon got a connection. A voice in English said he was calling from the infantry command post. Santon hesitated to recognize the speaker. It might have been an English-speaking Jap. He asked the voice for identification. The answer came back immediately.

"There's a man with you who has a picture of a pretty girl in a very short skirt . . ."

Captain Robert Gillespie gripped Santon's shoulder. "That's John May," he said. "He knows I'm here. I showed him the snapshot a month ago."

Second Lieutenant May had no telephone communications with the front. Before he could relay further information the Japs again jammed the circuit. Captain Santon switched to French. Again the Japs stopped broadcasting in order to listen, giving him a chance to get in a few words in English establishing radio contact between the fire direction and the big guns toward the rear.

At 2230 Gunner Schevchenko located two strands of a broken wire and spliced them. Second Lieutenant Paul J. Dunfey, leader of a special weapons platoon, was on the heights above the Jap horde in the swamp. He noted the enemy's activity; he heard the shouts and wild laughter. Over Schevchenko's hasty connection he relayed his observations to First Lieutenant Walter G. Barrett, at the right extremity of the front. To clear the air this time of Jap interference, Captain Santon resorted to Spanish. The Japs stopped broadcasting, and before they could resume Captain Santon got the additional information through in English.

Shevchenko completed the connection between Barrett and May at 2330. The circuit was completed from Dunfey to Barrett to May by telephone, from May to Santon to the artillery by radio. Santon was still talking—after having preceded his English with a burst of Russian—when the Japs climaxed their banzai preliminaries with an artillery barrage. Shells dropped into the fire direction center. Santon was too occupied with

what he later termed his "foreign confusion" to take cover.

At 2345 Dunfey specified artillery targets on the edge of the marsh. By 2350 distances and directions were computed and the big guns prepared to register. At 2355 the Japs, saturated in sake, hell bent for destruction, swarmed out of the swamp. They were armed with rifles and grenades, knives and clubs, pitchforks and baseball bats. They were led by an officer swinging a samurai sword, waving a big battle flag. They headed for Lieutenant Dunfey's unit. Dunfey passed the word. Santon issued the fire command after a short preliminary in Yiddish. The big guns opened up and fragmentation burst among the enemy. They scattered in confusion to evade the shells, but the shells pursued them relentlessly. Machine-guns bound the enemy in a vise of flanking fire.

The bog of death was described by Lieutenant Dunfey. "Arms and legs flew like snowflakes. Japs ran amuck. They screamed in terror until they died."

The artillery funnelled 26,000 shells into the pocket between midnight and 0300. "The heavy guns were plenty hot," Santon said. "They fired with the rapidity of automatic weapons."

The banzai was disrupted. Not a rifle shot was fired, except at Schevchenko and his wire crew.

On the left sector of the line, the Jap counter-attack started at 2245 and lasted until daybreak. Our artillery was pulled down to within 70 yards of American lines. With rifles and automatic weapons the enemy rushed our defenses shouting, "Marines, you die." They lobbed grenades into trenches, laughing drunkenly, yelling, "Fire in the hole." They were thrown back by sharp crossfire, but those in the rear waded forward over their own dead to Marine parapets, and died in Marine foxholes.

Japs Withdraw, Marines Advance

The attack subsided as Jap dead increased. During the early morning hours the Japs were heard recovering their wounded for a withdrawal. At daylight more than 400 enemy bodies were counted in the sector.

After a well coordinated preparation by aviation, naval gunfire, and artillery, the Brigade jumped off at 0700, July 26. Resistance was initially light on the left. Units in the right zone of action received heavy artillery fire as they formed for the push. Casualties necessitated reorganization which delayed the advance for an hour.

The forward thrust of elements on the left progressed speedily. During the afternoon, however, they met increasingly strong resistance from enemy emplacements with well prepared fire lanes cut through the foliage. Heavy machineguns and knee mortars emplaced on a hill 200 yards to the right front pinned down Marine forces for

two hours before they were reduced by our mortars and automatic weapons. The Marines slugged on.

To the right, units skirted the swamp which had sheltered the Japs the night before. They swung north on a narrow front and tramped up the Piti-Sumay Road, led by armored vehicles. Mines made from aerial bombs, their noses protruding in little mounds above the surface of the road, delayed the advance. Suddenly a hail of small arms and machinegun fire rained on the Marines from eight emplacements buttressed by dirt filled oil drums reinforced by tree trunks and perfectly concealed in the underbrush.

The bunkers were lodged at ten yard intervals on a hummock above a trail junction. Their guns cracked at point blank range; American casualties were heavy. Under intense fire Marines went forward to rescue wounded comrades as close as 75 yards from the enemy strong point. Tanks and half tracks, firing at a maximum rate for the next 15 minutes, pulverized the emplacements. The offensive rolled toward Orote.

At 0715 of the 27th, the Brigade started up the peninsula. Increasingly determined resistance was met as the day wore on. The rolling avenues of approach were restricted by dense undergrowth and interspersed with marshland. The Marines' main effort was made along the Sumay Road, and the road was mined. Explosives accounted for few casualties but they bogged the advance until sappers neutralized the area. A few remote pillboxes crested the hills or plugged the narrow saddles. Most of the bunkers were arranged in depth, mutually supporting on both sides of the road. They were supplemented by automatic weapons and field guns concealed in slits in the thorny vegetation.

As the men of the Brigade gained the approaches to the Old Marine Barracks that afternoon, the terrain flattened out, giving the Japs a wide field of devastating fire which for three hours took a heavy toll. This factor, however, permitted the commitment of tanks to the action. General Shermans led the attack over the flatlands and the infantry fanned out behind them.

Japs Ordered to Defend to Death

Assault elements fought yard by yard up the peninsula. Information later obtained from prisoners disclosed that the Japs had been ordered to die on this final defense line. Sniper fire was heavy and American casualties increased. The enemy utilized every natural object to forestall the Marine push. A platoon under 1st Lieutenant Lester J. Markusen, killed 15 Japs tunnelled under the roots of a banyan tree. Many Marines died; a wounded Marine and the corpsman who treated him were killed by a long burst of automatic fire.

On the right, elements used antitank grenades

to flush pillboxes on the forward slope of a ridge. Twenty Japs ran out of one ripped emplacement. They converged on a sector of the line held by a platoon under 1st Lieutenant Marvin Perskie. "We were ready for them," Perskie said. "We had a field day in a few minutes."

Beyond the ridge was a fuel dump in a coconut grove. Pillboxes were scattered under the geometrical pattern of the trees. Our tanks blasted the emplacements. Oil drums burned smokily. The grove rose gradually to a higher ridge where the Japs had their heaviest installations. Marines were under constant automatic fire from well-concealed log and concrete positions on the hill. The barrage inflicted few fatalities but many flesh wounds.

All tanks available were massed in front of the assault troops. At point blank range they blasted a hole through the enemy's main line of resistance. The neck of Orote was breached, and the advance continued. In the vicinity of the prewar Marine reservation it again was stopped by another strongly defended position along the rifle range and the high ground above Sumay.

Breaking the Jap Will to Resist

Jap riflemen fired from fortifications that had been gutted by the preinvasion shelling. All of them were killed. Pillboxes on the heights were demolished by explosives. The Marines surged on again. Remaining Jap forces broke and ran.

From the time the invaders had hit the beach a week before, Jap resistance had grown in fury. Yet the drive of the Americans was never halted. They broke the banzai charges, they stormed fortresses, swept hills, flushed strong points. Their relentlessness undermined the Jap will to resist. The Jap spirit withered, and nothing else remained. Defeat was irrefutable and the Japs accepted it. They hastened it with suicidal cooperation.

Forty Japs in full battle array marched down the Sumay Road at 1700. A Jap officer carrying a battle flag headed the column. The turret guns of every tank and the rifles of every infantryman in the area opened up on them. The Japs were obliterated.

At 2200, as the Americans prepared for the night, 12 Japs attacked a point in the line. Second Lieutenant (then Corporal) Webster J. Bachelot, Jr., killed three of them with his bayonet before he himself was stabbed in the chest. The other nine were killed by rifle fire. Despite his wound, Bachelot took a security post 25 yards ahead of the front lines while his men dug foxholes. But no other infiltrating attempt was made by the enemy. The Jap defense of Orote airfield and the vital Apra Harbor area was on the whole disjointed, but isolated knots of resistance continued to fight fanatically.

The Brigade resumed the attack at 0830, July

28. The enemy was dug in fortified caves along the steep bluffs south of Sumay. They were sealed by demolitions while tanks and infantry units circled the ghost town and entered it from the northwest without opposition.

Units of the Fourth Marines, supported by tanks, pressed forward through the thick vegetation. Suddenly the enemy opened up from 250 pillboxes arranged in depth. The tanks, their visibility blurred by foliage, were unable to register flat trajectory fire on enemy emplacements. On foot Marine Gunner Oliver W. Ostmeyer, led them to open terrain. Within view of the enemy he was charged by a sword-swinging officer. Ostmeyer shot him as the tanks pulverized the targets. Infantrymen flanked the strong point and picked off Japs as they scrambled from the twisted emplacements.

Three platoons lost their commissioned officers and were taken over by NCOs. The platoon leader, platoon sergeant, platoon guide, and two squad leaders were numbered among the casualties of one unit. The third ranking squad leader, Sergeant Lavarre Tierman, took command.

The Brigade jumped off at 0800, July 29, to seize the remainder of Orote Peninsula. Tanks and planes roared in support. Progress to the west was rapid. The Fourth Marines on the right boundary of the air strip overran concrete retentments and captured a thick-walled concrete tower with flame throwers. A group of 125 Japs was killed in a bunch. The airfield was quickly taken.

At 1500 the American flag was raised over the ruins of the former Marine Barracks at Sumay. The 22nd Marines, which had captured the site, furnished a guard of honor. The Brigade and the regimental commanders were there. General Shepherd paused between battles for a solemn moment to pay belated tribute to the few Marines of the Guam garrison who were overwhelmed by Jap troops and tanks and planes in the first week of the war. Beyond the telegraph pole which served as a flagstaff were smoldering fires and blistered steel. Colors were sounded on a Jap bugle, and the drums of our artillery to the North never ceased.

"Ready to Fulfill Its Destiny"

"On this hallowed ground," General Shepherd, said, "you men and officers of the First Marine Brigade have avenged the loss of our comrades who were overcome by a numerically superior enemy five days after Pearl Harbor. Under our flag, this island again stands ready to fulfill its destiny as an American fortress in the Pacific."

Orote Peninsula was ours. There still remained snipers in the wooded areas and knots of Jap caves around Sumay. The gruesome process of destroying them began on the morning of July 30. Patrols scoured the caves bypassed in the advance 1000 yards west of Sumay. It was not feasible to

Jap Reverse Strategy

Japanese officials had difficulty explaining to Guamanians the appearance of American planes and ships prior to the invasion, since they had previously declared that they were virtually non-existent. One Japanese officer tried, by telling a native: "We have new strategy to defeat Americans now. First we let American planes bomb Guam. Then we let American Marines land on Guam. Then we back up and draw them in trap. Then no more Marines." SGT. EDWARD C. STODEL, Marine Corps Combat Correspondent.

seal their openings with demolitions, for dense vegetation and rocky terrain made it impossible to approach the entrances without drawing heavy fire. Rocket launching landing craft shelled the side of the promontory from Apra Harbor. When the enemy was driven deep into the caves, two squads led by Captain William J. Stewart approached the hideout from the seaside. They inched along the base of the cliff and killed 38 cave dwellers with BARS, grenades, and flame throwers.

Targets for July 31 remained the cliffs west of Sumay, which were closed by rockets and demolitions. Foot troops evacuated the area during the shelling, returned to eliminate remnants of resistance. Mopping up operations were completed in that area the next day.

On August 1 a unit of the 22nd Marines departed on a distant patrol. They left Orote at 0600, following the coastline south to the lowest extremities of the island, then north along the eastern seaboard. The patrol established bases along its route of advance. It combed the area.

Extensive patrolling by elements of the Fourth and the 22nd Marines to clear the Japs from the southern portion of Guam began the next day.

On the third of August a group of Chamorros assisted Marines in reducing Jap stragglers. Patrols operated over southern Guam on the fourth and the fifth.

The Brigade swung north of Agana August 6 to join the Third Division in a coordinated attack to free the rest of the island of the enemy. But the backbone of the enemy was already broken. Our troops pressed their advantage relentlessly. Our advance was rapid and many Japs died.

Pursuit of the enemy continued August 7. During the afternoon of the eighth, patrols advanced to Ritidian Light, northernmost point on Guam. Resistance was negligible. Patrolling continued August 9. At 1900, August 10, it was announced that all organized enemy resistance on Guam had ceased.—END

Handling Enemy Civilians

(Continued from page 16)

ade, thus further reducing the number of persons who could be sheltered.

On Saipan we had learned one other lesson that I have not mentioned. There we installed standard collapsible, eight-seat latrines. The prisoners did not know how to use them, and, despite frantic efforts at instruction by the "hanchos," they could not be taught. They insisted on climbing up on the box, one foot on either side of the hole, and squatting down while holding on to the back-rest. The result was a disgusting, unsanitary mess on the outside of the latrine. To fix this on Tinian we built special latrines—just a flat platform with lidded holes that we could lay on the ground over the excavation. Thus there were no side-walls to be slopped over, and it worked to perfection.

Our experiences in the Marianas taught us a number of lessons and provided a number of answers to our questions. There are still some urgent problems, however, to which answers must be found before we find ourselves faced with ten or a hundred times the number of civilians that

we did on this operation. Among those problems are such as what we are going to do if we do not find large stocks of food with which to feed the prisoners; even if we have the food, can we always count on finding cooking utensils; since we always have barely sufficient water for our own needs, how are we going to take care of civilian needs when their number is in the tens of thousands?

The most serious problem of all, perhaps, is the need for the provision of adequate medical facilities for caring for the internees immediately they come into our custody. I venture to say that not less than 75 per cent of the civilians we took were in need of medical care—either wounded, diseased, or suffering from the results of days to weeks of living in hills and caves, with inadequate food, water, and shelter. This last applies especially to young children. On Saipan, an Army field hospital began accepting our seriously wounded on D plus 8. On Tinian, it was eleven days before any could be hospitalized. The Division medical personnel did all they could, but hospital facilities were urgently needed, and such are beyond the capabilities of our organizational medical units, who are busy taking care of our own wounded. Something must be done to alleviate this situation.



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Base Defense Logistics

(Continued from page 9)

be a separate task group, as will the artillery, engineers, antiaircraft, and so on.

The supply officer of the ground defense force, as a whole, is thus faced with the determination of a method of distribution to organizations which are considerably scattered. Refer to the chart again, and you can see that the infantry, located in each sector, has maintained its tactical and logistical integrity. The Seacoast Artillery, however, while it is grouped in one task organization, is much more likely to be distributed over the entire land mass. Suppose that one battalion of seacoast guns has the mission of guarding the approaches to Maka Jima. In order to fulfill such a mission, it must place each of its batteries in separated positions with separate fire missions, as is shown on the chart. Each battery is, therefore, in a sector to be defended by an infantry group. Further, the 1st Battalion, 5th Marines, as the force reserve, is assigned to a position within the western sector on Maka. All of the supporting arms are similarly assigned to positions within sectors already occupied by other task organizations.

The supply officer has two systems by which he may serve these task groups. First, he may divide the islands into subadministrative districts, appointing sub-agencies which will be responsible for the supply of all units within their own areas. This is a continuation of the method by which the area commander supplies the forces on Maka Jima. It has the great disadvantage of complexity to begin with, and, further, is likely to impose a considerable strain on the organization designated as the agency. If there are more than a very few units within the sector, it is necessary to attach additional service personnel to such an organization to enable its normal complement to cope with the situation confronting it. This is not a new problem, but it does bring to mind the axiom, applicable alike in tactics or logistics, that an organization must be provided with the means to accomplish the mission assigned to it.

In this problem, suppose the 1st Marines, in the western sector on Maka, is designated as the sub-agency for the subadministrative district which coincides with that sector. Within the sector are 155-mm gun batteries, having no supply personnel; an antiaircraft battalion, the 1st Battalion, 5th Marines, assorted engineer and pioneer troops, the 1st Tank Battalion, and various other components of the ground forces. The 1st Marines' supply personnel must serve their own battalions, the task for which they are formed. In addition to this, however, they must supply a number of units whose total strength is even

greater than the original strength of the regiment, and whose diversity of needs requires technical knowledge far beyond that of the infantry.

Therefore, personnel from some other source must be attached so that the R-4 can accomplish his mission. On Maka, the only such personnel available are those from the division service troops or from the depot. It is noticeable that one of the constituents of these attachments must be motor transport, in addition to the truck company which the regiment might expect from the division.

This discussion has so far considered only the disadvantages of such an arrangement. In the particular situation given on Maka, the disadvantages are more marked than might be true in other places. Suppose, however, the sectors designated by the D-3 of the Ground Force were only two, instead of three, and comprised the two large islands. There would then be a water boundary between the two sectors. Such a boundary would definitely hinder, if not entirely prevent, the delivery of supplies from a division on Maka to its regiment and other units on Lava. The same difficulty would be evident if there were a high mountain range or some other impassable terrain feature imposed between the source of supplies and their destination. In fact, this was the reason for not using, between Maka and Lava, the system so far discussed. Its main advantage is, then, that it is a workable system when terrain features, or other barriers, prevent access to subordinate organizations of a parent which has been designated as the administrative agency.

The second system has already been used here on the chart, as was pointed out. In it, the normal channels of supply are employed in task organizations. That is, the task organization commander is responsible for the supply of the units of his own command. The obvious advantage here is that each unit receives its supplies direct from the next higher echelon, as is true in any normal situation. This leads to simplicity and clarity of orders. The disadvantage is that such a system increases the use of transport, and the difficulties of traffic control.

To illustrate, refer to the island of Maka and its one administrative district. The division, being the senior echelon of the ground troops, procures all supplies for units of the ground forces on Maka from depot stocks. It then supplies each of the next subordinate commands with its own supplies. That is, the infantry regiments, artillery regiment, engineers, and so on, draw from division. Let's say that the artillery headquarters is two miles north of B, and the regimental quar-

termaster's dumps are nearby. The Artillery-4 must plan to distribute supplies through his battalions to the batteries, although the battery locations might be such that supplies will backtrack from battalion distributing points. Again, however, this method of distribution is frequently preferable to the other, since it does make use of organization supply units which are already functioning, and which have normally worked with their own subordinates.

By this point in the demonstration, it can be seen that the Area Command has used a combination of these two systems in its supply of the three islands, with the Navy, Air, and Ground organizations spread over them all. For Lava, an agency is appointed to serve all components of

all forces, and, on Maka, supplies are distributed through the normal channels of command and logistics. In the tactical scheme shown here, the small island of Tuin will be defended by a portion of the western sector force, as determined by the sector commander. It is, therefore, incumbent on this commander to supply this group also, and, unless boats are specifically attached to his control, he must request them, or request their use as they are needed.

The Ground Force has thus systematized the supply for Maka through normal channels, and has left the local supply of his forces on Lava to that Administrative Agency on that island, although the tactical command of Lava remains under him. *(Continued on page 68)*

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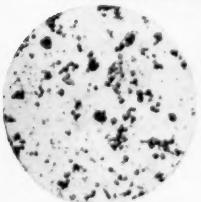
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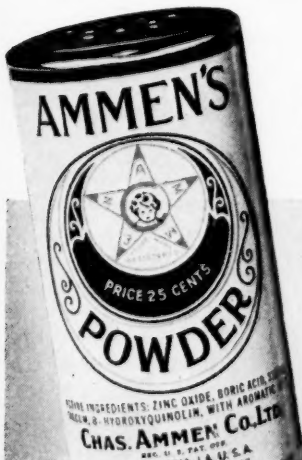
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(Continued from page 66)

To be specific, the Ground Force-4 orders the location of the reserve dumps to be established by the depot in each of his sectors. He further states in his plan the amounts to be kept in these dumps. This is derived by computing the required supplies for the units allocated to each sector, per day of supply, and multiplying by the number of days available—in this case, 35 days and 10 units of fire in each sector reserve dump for the organizations within that sector. From these amounts, he specifies that regiments and battalions will draw the amounts to be placed on positions, and the amounts to be segregated as battle reserves. He then may specify the conditions under which the battle reserves may be used. It should be recalled that the minimum levels on the islands still are the sum of these various reserves.

The question of unit or supply point distribution must be answered by a study of the circumstances surrounding each organization, and each class of supplies. To begin with, a paramount factor is whether or not the subordinate command includes enough transportation, including boats, if they are required, to maintain supply point distribution. If it does not, the senior echelon must deliver supplies. The various classes of supplies, since they have different uses, need different methods of distribution in base defense, as they do in land warfare. Rations, for one, are used on an automatic basis, whether during battles or between them. Therefore, rations may be issued on a schedule. Ammunition, on the other hand, except for small amounts for training and registering of artillery, is used only during combat. For this reason, stocks of ammunition must be built on the various levels of command. It is not necessary to have a series of issues on schedule.

The Ground Defense-4, in his written administrative order, gives information which will be of value to the subordinates. He then states the location of the emergency and reserve dumps, and indicates the amounts in each, and specifies that from the reserves, battle reserves and supplies to be placed on positions will be drawn. This follows the general method of issuing an order of putting information first, then providing for the general subject matter. Following this are the details of instructions to subordinates, giving locations and means of their obtaining the various items which they require. The remainder of the order is similar in form and content to any other administrative order or plan. In this connection, it should be remembered that a hostile population confined to an island can be much more dangerous even than in a land warfare attack, and definite measures must be taken through the civil affairs personnel for its control.

The lowest level of command which will be discussed here is that of the infantry regiment, or sector force. The 7th Marines, being in a sepa-

rate administrative district from the Maka District, plans its supply and that of its attached units in a manner similar to the one used by the Ground Forces, just described. Therefore, let us consider the 1st Marines, in the western sector on Maka. If it had been given the administrative responsibility for all forces within that district, and had had attached to it the necessary additional service troops, its plans also would have been similar to those of the Ground Force. As it is, however, it is responsible only for its own battalions. This, though, includes whatever unit is placed on Tuin.

It does not appear necessary that Tuin be defended in strength, since its loss will not be a serious detriment to the defense as a whole. Therefore, it can logically be outposted by a small detachment, such as a rifle company, perhaps to protect a radar detachment.

Again to precede the discussion of logistics with a resumé of tactics, the regimental commander would divide his sector into subsectors, each of which would be defended by a battalion or similar unit. A portion of the command would again be withheld to serve as a reserve, and one of the battalions might be directed to place a company on Tuin. It would possibly be quite as correct to segregate Tuin as a separate subsector, in which case the regimental commander remains responsible for its supply. The R-4, then, plans for the supply

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of his units in much the same way in which he plans a standard defense. It is at this point, possibly by recommendations from the battalions, and possibly by orders of the R-4, that the amounts and locations of the battle reserves are specified, as well as the supplies to be placed on positions. Details of methods of distribution having already been discussed for other echelons, will not be repeated.

All plans for the supply of the base, having been completed by each echelon of the command, are coordinated. Since each command refers some decisions to its subordinates, and since each echelon is so interwoven, not only with adjacent and superior commands, but with tactical dispositions, such a coordination is more than necessary—it is mandatory. The various plans having been fitted together after the manner of solving a crossword puzzle, the supplies themselves are distributed in the required width and depth. Thus the plans are made, and followed, and the result as shown on the chart is complete prior to the beginning of the hostile attack. The manner of supplying the force after the attack begins, or during and after the Final Defensive Phase, is the subject of additional complete or fragmentary orders, and will depend on the development of the hostile maneuver.

Our progress westward appears to be gaining in speed, and we are by-passing more and more Japanese bases. With our fleet engaged in offensives near China, or even near Japan itself, it is thus more and more possible that the Japanese will seize the opportunity to counterattack our own bases while they are without the protection of the Navy. And surely they will strike at our bases if they believe that our strength is overextended. Our supply problems are geometrically increased by the square or cube of the distance we move westward, and we cannot jeopardize the safety of our bases by a failure of the supply system within them.

Postwar Planes and Ships

Pan American Airways has arranged to purchase from Consolidated Vultee Aircraft Corporation 15 huge airliners designed to carry 204 passengers on flights of more than 4000 miles. The new plane is of unusual size (230 foot wing spread) and will be powered by six 5000-hp engines of the pusher type. The wing is spaced virtually amidships of the long fuselage, and will lift the 320,000-pound ship for flights of nine hours from New York to London.

Post-war retention by the United States of fleets capable, with those of our allies, of controlling the world's oceans, were called for by Navy Secretary James Forrestal in his first annual report. With the present Navy the largest in the world, Mr. Forrestal said the Navy is planning to build more ships for the next several years.



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all were purchased by the Aviation section which had been established under the Signal Corps by the Act of 1914. Of these, one found its way into the Smithsonian Institution, thirty-five were destroyed by accident, and twenty-three, mostly hydroplanes and trainers, were in actual service. This number was depleted still further by the time America entered the war."

Fighting Wings can be recommended as an interesting record of aerial combat covering what may be aviation's greatest period of development.—J. C. K.

In Burma's Green Hell

The British Army, it is said, produces one eccentric soldier-genius every generation—Wolfe of Quebec, Clive of India, "Chinese" Gordon, Lawrence of Arabia. The eccentric soldier-genius of the present generation, according to Author Charles J. Rolo, was the late General Orde Wingate, liberator of Ethiopia and hero of Britain's first victory against the Japanese.

Reading *Wingate's Raiders** you will very likely agree with Mr. Rolo. The book, as a graphic tribute to Wingate's abilities and achievements, is a tribute of fact and not simply of accolade. When you have finished this exceptionally vivid account of the exploits of Wingate's Raiders in Burma's green hell, you will *know* why the dynamic young Englishman was a great leader.

Called to India in the spring of 1942 to undertake a counter-thrust into Burma which would knock the enemy off balance there, he set to work with the same fiery enthusiasm that had marked everything he had done. Given a command made up mostly of second-line British, Burmese, and Indian troops, he announced "I'll make any man who's fit a jungle fighter capable of coping with the best the Japanese have got," and in six months of gruelling training he did just that with every man he had.

Wingate made the most of his limited force by combining his own brand of guerrilla warfare with a Wellsian blend of modern science. He built his "long-range penetration," as he called it, around daring new uses of the plane and radio, at the same time reverting for transport to the pack animals of Alexander the Great—elephants, mules and bullocks.

The Japs previously had outwitted the British by creeping up behind them via jungle trails; Wingate went the Japs one better by forcing his way through virgin jungle to ambush them as they marched along the beaten paths.

This story of Wingate's pioneer tactics and successes should be of special interest to Marines, particularly those who would like to compare jungle fighting a la Burmese with their own.

It seems true indeed that General Wingate's

**Wingate's Raiders*, by Charles J. Rolo. (The Viking Pres, 264 p., \$2.50.)

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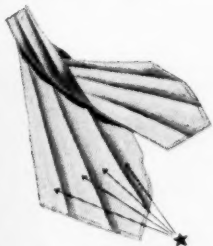
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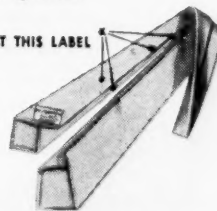
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death in a plane crash in March, 1944, robbed the United Nations of an inspired military innovator we could ill afford to lose.—J. P. B.

Aids to Chinese

These two books, *Chinese in 30 Lessons** and *A Concise English-Chinese Dictionary*** are among the best of their kind I have seen. Attractively gotten up, clearly printed, and though thin for overseas use—a thicker pocket size dictionary would, I think, be preferable—these books could be an effective tool for learning the elements of the Chinese language; if used with intelligence and application.

"*Chinese in 30 Lessons*" is not, I think, a book from which the average beginner could expect to teach himself to speak Chinese. Pronunciation of the language is too subtle a trick to be learned from reading descriptions of approximate sounds, and words must be heard before we can hope to reproduce them even from the indications in the book. A student with some knowledge of Chinese pronunciation would find the book very helpful,

* *Chinese in 30 Lessons*, by Yu Feng Sung and Robert Black (Marcel Rodd Co., 126 p., \$1.98 paper, \$2.98 cloth).

** *A Concise English-Chinese Dictionary*, by E. M. Chang and Shirley Maxwell (Marcel Rodd Co., \$2.95 paper, \$3.95 cloth).

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but for a beginner the best results would naturally come from use as a classroom text or with a Chinese-speaking instructor.

The dictionary, with its 4000 most commonly used words, is an excellent beginner's dictionary. The brief introduction describes the general make-up of the Chinese language in its fundamental differences from Western languages, as a basis for effective use of the dictionary. The dictionary incidentally, in spite of its limited size, fills a real need. Whereas there are a number of good Chinese-English dictionaries, both large and small, there seem to be almost no available English-Chinese dictionaries.—2ND LT. WILBUR SZE.

Spoken Japanese

By drastic abbreviation and an exclusive concentration on the spoken language, Colonel Sullivan has been able to compile a combined grammar and elementary vocabulary of Japanese in a handy pocket-size form. In his *Elementary Japanese** the method of presentation is the orthodox one of "lessons," each taking up some specific grammatical problem and illustrating it by sample sentences. Orientation toward military use is provided chiefly by English-Japanese and Japanese-English vocabularies at the end, containing about one thousand words apiece. Unfortunately, it is more difficult to compose a really first-class short manual of Japanese than a full-scale textbook. The unwieldy and illogical character of the language demands a more careful organization of material as explanations are abbreviated. The chief defect of Colonel Sullivan's handbook is its lack of this extra degree of care in presentation. A beginner in Japanese could hardly fail to be misled by its numerous instances of confusing arrangement and unexplained references. For safe use, consequently, it should be supplemented by the comments and explanations of a skilled instructor.—A. C. S.

Analysis of the Jap

It is probable that less material of an authoritative nature has been published about the Japanese than of any other major belligerents of this war. The editors of *Fortune Magazine* have sought to make up for this in good measure in a Fighting Forces Series paper-bound booklet, *Japan and the Japanese*.†

The avowed intention of the editors is to show how our Pacific enemies "work, think, eat, and amuse themselves," and "what they believe in, what they want, and how they get it."

In this, the book succeeds worthily, furnishing in the process many significant facts and observations generally unfamiliar to the American people.

* *Elementary Japanese*, by Col. E. J. Sullivan, C.W.S., U.S.A. (The Infantry Journal, \$1.00).

† *Japan and the Japanese*, by the editors of *Fortune*. (Fighting Forces Series, The Infantry Journal, 166 p. \$25.)

The range of its analysis covers Japanese emperor worship, political and military history, government control of H. Fujino (John Q. Public), armed forces, and ideological ambitions.

Also of interest is a section of photographs which include pictures of a number of Japanese military and civil rulers. These will be faces to remember on the day of reckoning.—J. P. B.

Daredevil Raiders

*Ranger Mosby** appeals primarily to two classes of readers: students of the Civil War (or the War Between the States, if you prefer), and residents of northern Virginia where almost all of the hell-bent-for-leather action occurs.

It also should be of keen interest to Marines, since it has to do with a technique at which the Marine Corps is considered a past master—that is, the harrying of large enemy forces by small picked commands which strike deep in the enemy's own bailiwick to play havoc with his lines of supply and communication.

Mosby was an astute young Confederate officer who organized a command of daredevil raiders which numbered variously from a dozen to 800 men. Northern papers called them guerrillas, but they actually were troops of the Confederate army and all of Mosby's operations were recognized and applauded by General Lee in official correspondence.

Roaming within sight of Washington while the main Northern armies were striving to advance far to the south, Mosby's rangers kept the Yankee high command in a continual dither by ravaging supply columns, blowing up trains, mauling picket lines, and kidnapping high ranking enemy officers. Many Northern expeditions were sent out to liquidate the pesky rangers, but invariably the hunters were shot up and themselves became the hunted.

General Custer captured and hanged six of Mosby's men. Mosby thereupon hanged six of Custer's men. They called a truce on hanging. Mosby's command still was operating at full tilt when Lee surrendered at Appomattox, and it was some time before the rangers could be persuaded to put away their arms and go home.

As a bizarre after-climax to all this, Mosby later became one of the staunchest friends of General Grant, who during the war had ordered him shot on sight.

Mr. Jones' research has been most thorough and his writing is lucid, dramatic and fluent. *Ranger Mosby* is an excellent addition to the American gallery of military masters and to our growing literature of behind-the-lines warfare.—J. P. B.

* *Ranger Mosby*, by Virgil Carrington Jones. (The University of North Carolina Press. 326 p. \$3.50.)

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Regulations Governing Souvenirs

Souvenir hunting, popular overseas recreation, has brought forth its own set of rules designed to prevent tragic accidents, assistance to the enemy, and the distribution of material which our own forces can use. Navy regulations now mention six specific types of souvenirs which may not be sent back to the States by Naval personnel.

These are:

1. Radio or radar equipment, or parts of such equipment.
2. Inflammables of any nature.
3. Explosives, or any items containing explosives.
4. Name plates taken off any type of equipment. (This does not include captured identification tags.)
5. Firearms of the automatic type, such as machineguns, sub-machineguns, or any other type of gun from which a number of shots or bullets may be discharged with one continuous pull of the trigger.
6. Items whose usefulness to the service or whose value as critical material outweighs their value as trophies, as determined by the theater commander.

In addition, small firearms or other weapons

which might be concealed on the person of individuals to whom they are given cannot be mailed unless one is certain that such weapons have been registered in compliance with federal, state and local rules in effect wherever the weapons are to be retained. If such items as rifles, small arms, bayonets, blackjacks, slingshots, billies, bludgeons, metal knuckles, and swords are mailed or brought back without registration, laws are violated.

When captured enemy equipment is to be brought back to the states as souvenirs, a certificate in duplicate, signed by the owner's commanding officer, must be obtained. This certificate states that official permission is given by the theater commander to retain as personal property the war souvenirs listed on the certificate. One copy of the certificate is surrendered to the customs officer at the port of entry to the states.

If captured material is mailed from overseas, the parcel must contain a similar certificate in duplicate. If the souvenirs are sent as a gift there also must be a declaration in duplicate that the parcel is authorized under the law permitting mailing of duty-free personal property not in excess of \$50 evaluation. Packages which do not conform to these rules are subject to confiscation.

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Military Pilots May Obtain Commercial Certificates

A change in Civil Air Regulations, which became effective November 25, 1944, makes possible the issuance of private and commercial pilot certificates on the basis of military competence to pilots who are returned to inactive status, or who are on duty as rated military pilots.

An applicant who is, or was within the preceding 12 calendar months a member of the armed forces of the United States and has served on solo flying status for a period of six consecutive months shall be deemed to have met the aeronautical knowledge, experience and skill requirements of the Civil Air Regulations for the issuance of a pilot certificate appropriate to the military rating held. However he must pass a written examination on Parts 20 and 60 of the Civil Air Regulations. In addition he must submit documentary evidence showing that he is a member of the armed forces or that he has been honorably discharged or returned to inactive status; that he is, or was, a rated military pilot; and his total solo flying time.

Further information and applications may be obtained by writing the General Inspection Division, Civil Aeronautics Administration, Washington 25, D. C.

The Marines Were Not Dummies

When the Japs on Guam built dummy gun positions, they really built them. During one advance there was uncovered one group of decoy positions which contained practically everything but food cooking over a bivouac fire—and there was a place marked out for that.

Off the Harmon Road, in the southern portion of the island, there were four dug-in gun emplacements with poles painted to simulate anti-aircraft guns. Around each position was a full crew of dummy figures. Dressed in Japanese uniforms, the figures were in regular firing position, even to "loaders" stooped over to pick up shells, and the figure of an officer scanning the sky for planes.

The elaborate effort was wasted, however. When the attack reached the ridges overlooking the area, the dummy positions were spotted and not a shot was wasted on them.—T/SGT. MURRAY MARDER, Marine Corps Combat Correspondent.

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